REGULATIONS & SYLLABUS
Of
B.Tech. (Computer Science & Engineering)
(W.e.f 2012-13 admitted batch)
REGULATIONS  
(W.e.f. 2012-013 admitted batch)

1.0 ADMISSIONS

1.1 Admissions into B.Tech (Computer Science & Engineering) programme of GITAM University are governed by GITAM University admission regulations.

2.0 ELIGIBILITY CRITERIA

2.1 A pass in 10+2 or equivalent examination approved by GITAM University with Physics, Chemistry and Mathematics.

2.2 Admissions into B.Tech will be based on an All India Entrance Test (GAT) conducted by GITAM University and the rule of reservation, wherever applicable.

3.0 STRUCTURE OF THE B.Tech. PROGRAMME

3.1 The Programme of instruction consists of:

(i) A general core programme comprising Basic Sciences, Basic Engineering, Humanities & Social Sciences and Mathematics.

(ii) An engineering core programme imparting to the student the fundamentals of engineering in the branch concerned.

(iii) An elective programme enabling the students to take up a group of departmental / interdepartmental courses of interest to him/her.

In addition, a student has to

(i) carry out a technical project approved by the department and submit a report.

(ii) undergo summer training in an industry for a period prescribed by the department and submit a report.

3.2 Each academic year consists of two semesters. Every branch of the B.Tech programme has a curriculum and course content (syllabi) for the courses recommended by the Board of Studies concerned and approved by Academic Council.

4.0 CREDIT BASED SYSTEM

4.1 Each course is assigned certain number of credits which will depend upon the number of contact hours (lectures & tutorials) per week.

4.2 In general, credits are assigned to the courses based on the following contact hours per week per semester.

One credit for each Lecture / Tutorial hour.
One credit for two hours of Practicals.
Two credits for three (or more) hours of Practicals.

4.3 The curriculum of B.Tech programme is designed to have a total of 190 to 200 credits for the award of B.Tech degree.

4.4 Every course of the B Tech programme will be placed in one of the nine groups of courses with minimum credits as listed in the Table 1.

4.5 - Table 1: Group of Courses

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Group of Courses</th>
<th>Code</th>
<th>Minimum credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Humanities &amp; Social Sciences</td>
<td>HS</td>
<td>12</td>
</tr>
<tr>
<td>2</td>
<td>Basic Sciences</td>
<td>BS</td>
<td>17</td>
</tr>
<tr>
<td>3</td>
<td>Mathematics</td>
<td>MT</td>
<td>10</td>
</tr>
<tr>
<td>4</td>
<td>Basic Engineering</td>
<td>BE</td>
<td>26</td>
</tr>
<tr>
<td>5</td>
<td>Core Engineering</td>
<td>CE</td>
<td>68</td>
</tr>
<tr>
<td>6</td>
<td>Departmental Elective</td>
<td>DE</td>
<td>9</td>
</tr>
<tr>
<td>7</td>
<td>Inter Departmental Elective</td>
<td>IE</td>
<td>8</td>
</tr>
<tr>
<td>8</td>
<td>Project Work</td>
<td>PW</td>
<td>8</td>
</tr>
<tr>
<td>9</td>
<td>Industrial Training</td>
<td>IT</td>
<td>2</td>
</tr>
</tbody>
</table>

Total 160
5.0 MEDIUM OF INSTRUCTION

The medium of instruction (including examinations and project reports) shall be English.

6.0 REGISTRATION

Every student has to register himself/herself for each semester individually at the time specified by the Institute / University.

7.0 CONTINUOUS ASSESSMENT AND EXAMINATIONS

7.1 The assessment of the student’s performance in each course will be based on continuous internal evaluation and semester-end examination. The marks for each of the component of assessment are fixed as shown in the Table 2.

Table 2: Assessment Procedure

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Component of assessment</th>
<th>Marks allotted</th>
<th>Type of Assessment</th>
<th>Scheme of Examination</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Theory</td>
<td>40</td>
<td>Continuous</td>
<td>1. Best two mid examinations of the three mid examinations for 15 marks each for a total of 30 marks 2. Remaining 10 marks are given by the teacher by conducting quiz / assignments / surprises tests etc.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>60</td>
<td>Semester-end</td>
<td>The semester-end examination in theory courses will be for a maximum of 60 marks.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>examination</td>
<td></td>
</tr>
<tr>
<td>100</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
| 2     | Practicals              | 100            | Continuous        | (i) 40 marks are allotted for record work and regular performance of the student in the lab.  
(ii) One examination for a maximum of 20 marks shall be conducted by the teacher handling the lab course at the middle of the semester  
(iii) One examination for a maximum of 40 marks shall be conducted at the end of the semester (as scheduled by the Head of the Department concerned). |
| 3     | Project work (VII & VIII Semester ) | 100 | Project evaluation | (i) 50 marks are allotted for continuous evaluation of the project work throughout the semester by the guide.  
(ii) 50 marks are allotted for the presentation of the project work & viva-voce at the end of the semester.* |
|       |                         |                |                   |                      |
| 4     | Industrial Training (Seventh Semester ) | 100 | Industrial training evaluation | (i) 50 marks are allotted for report submission and seminar presentations after completion of the training.  
(ii) 50 marks are allotted for the viva-voce at the end of the semester.* |
| 5     | Comprehensive Viva (Sixth Semester)     | 100            | Viva-voce        | 100 marks are allotted for comprehensive viva to be conducted at the end of programme.*  
Comprehensive Viva Voce to be conducted in the sixth Semester |

* Head of the Department concerned shall appoint two examiners for conduct of the examination.
8.0 RETOTALLING, REVALUATION & REAPPEARANCE

8.1 Retotaling of the theory answer script of the end-semester examination is permitted on a request made by the student by paying the prescribed fee within ten days of the announcement of the result.

8.2 Revaluation of the theory answer script of the end-semester examination is also permitted on a request made by the student by paying the prescribed fee within fifteen days of the announcement of the result.

8.3 A Student who has secured ‘F’ Grade in any theory course / Practicals of any semester shall have to reappear for the semester end examination of that course / Practicals along with his / her juniors.

8.4 A student who has secured ‘F’ Grade in Project work / Industrial Training shall have to improve his report and reappear for viva – voce Examination of project work at the time of special examination to be conducted in the summer vacation after the last academic year.

9.0 SPECIAL EXAMINATION

9.1 A student who has completed the stipulated period of study for the degree programme concerned and still having failure grade (‘F’) in not more than 5 courses (Theory / Practicals), may be permitted to appear for the special examination, which shall be conducted in the summer vacation at the end of the last academic year.

9.2 A student having ‘F’ Grade in more than 5 courses (Theory/practicals) shall not be permitted to appear for the special examination.

10.0 ATTENDANCE REQUIREMENTS

10.1 A student whose attendance is less than 75% in all the courses put together in any semester will not be permitted to attend the end - semester examination and he/she will not be allowed to register for subsequent semester of study. He /She has to repeat the semester along with his / her juniors.

10.2 However, the Vice Chancellor on the recommendation of the Principal / Director of the University College / Institute may condone the shortage of attendance to the students whose attendance is between 66% and 74% on genuine medical grounds and on payment of prescribed fee.

11.0 GRADING SYSTEM

11.1 Based on the student performance during a given semester, a final letter grade will be awarded at the end of the semester in each course. The letter grades and the corresponding grade points are as given in Table 3.

Table 3: Grades & Grade Points

<table>
<thead>
<tr>
<th>Grade</th>
<th>Grade points</th>
<th>Absolute Marks</th>
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</thead>
<tbody>
<tr>
<td>O</td>
<td>10</td>
<td>90 and above</td>
</tr>
<tr>
<td>A+</td>
<td>9</td>
<td>80 – 89</td>
</tr>
<tr>
<td>A</td>
<td>8</td>
<td>70 – 79</td>
</tr>
<tr>
<td>B+</td>
<td>7</td>
<td>60 – 69</td>
</tr>
<tr>
<td>B</td>
<td>6</td>
<td>50 – 59</td>
</tr>
<tr>
<td>C</td>
<td>5</td>
<td>40 – 49</td>
</tr>
<tr>
<td>F</td>
<td>Failed, 0</td>
<td>Less than 40</td>
</tr>
</tbody>
</table>

11.2 A student who earns a minimum of 5 grade points (C grade) in a course is declared to have successfully completed the course, and is deemed to have earned the credits assigned to that course. However, a minimum of 24 marks is to be secured at the semester end examination of theory courses in order to pass in the theory course.
12.0 GRADE POINT AVERAGE

12.1 A Grade Point Average (GPA) for the semester will be calculated according to the formula:

\[ \text{GPA} = \frac{\sum (C \times G)}{\sum C} \]

Where
- \( C \) = number of credits for the course,
- \( G \) = grade points obtained by the student in the course.

12.2 Semester Grade Point Average (SGPA) is awarded to those candidates who pass in all the courses of the semester.

12.3 To arrive at Cumulative Grade Point Average (CGPA), a similar formula is used considering the student’s performance in all the courses taken in all the semesters completed up to the particular point of time.

12.4 The requirement of CGPA for a student to be declared to have passed on successful completion of the B.Tech programme and for the declaration of the class is as shown in Table 4.

Table 4: CGPA required for award of Degree

<table>
<thead>
<tr>
<th>Class</th>
<th>CGPA</th>
</tr>
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<tbody>
<tr>
<td>Distinction</td>
<td>≥ 8.0*</td>
</tr>
<tr>
<td>First Class</td>
<td>≥ 7.0</td>
</tr>
<tr>
<td>Second Class</td>
<td>≥ 6.0</td>
</tr>
<tr>
<td>Pass</td>
<td>≥ 5.0</td>
</tr>
</tbody>
</table>

* In addition to the required CGPA of 8.0, the student must have necessarily passed all the courses of every semester in first attempt.

13.0 ELIGIBILITY FOR AWARD OF THE B.TECH DEGREE

13.1 Duration of the programme:
A student is ordinarily expected to complete the B Tech. programme in eight semesters of four years. However a student may complete the programme in not more than six years including study period.

13.2 However the above regulation may be relaxed by the Vice Chancellor in individual cases for cogent and sufficient reasons.

13.3 A student shall be eligible for award of the B.Tech degree if he / she fulfills all the following conditions.

a) Registered and successfully completed all the courses and projects.
b) Successfully acquired the minimum required credits as specified in the curriculum corresponding to the branch of his/her study within the stipulated time.
c) Has no dues to the Institute, hostels, Libraries, NCC / NSS etc, and
d) No disciplinary action is pending against him / her.

13.4 The degree shall be awarded after approval by the Academic Council.
RULES

1. With regard to the conduct of the end-semester examination in any of the practical courses of the programme, the Head of the Department concerned shall appoint one examiner from the department not connected with the conduct of regular laboratory work, in addition to the teacher who handled the laboratory work during the semester.

2. In respect of all theory examinations, the paper setting shall be done by an external paper setter having a minimum of three years of teaching experience. The panel of paper setters for each course is to be prepared by the Board of Studies of the department concerned and approved by the Academic Council. The paper setters are to be appointed by the Vice Chancellor on the basis of recommendation of Director of Evaluation / Controller of Examinations.

3. The theory papers of end-semester examination will be evaluated by internal/external examiner.

4. Panel of examiners of evaluation for each course is to be prepared by the Board of Studies of the department concerned and approved by the Academic Council.

5. The examiner for evaluation should possess post graduate qualification and a minimum of three years teaching experience.

6. The appointment of examiners for evaluation of theory papers will be done by the Vice Chancellor on the basis of recommendation of Director of Evaluation / Controller of Examinations from a panel of examiners approved by the Academic Council.
# SYLLABUS

Programme Code: EURCS 200701

**B.Tech. (CSE) First Semester**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Subject</th>
<th>Category</th>
<th>Marks</th>
<th>Hours per week</th>
<th>Credits to be awarded</th>
</tr>
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<tbody>
<tr>
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<td>Semester End Exam</td>
<td>Con. Eval.</td>
<td>Total</td>
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<tr>
<td>EUREG 101</td>
<td>Engg. English – I</td>
<td>HS</td>
<td>60 40 100</td>
<td></td>
<td>3</td>
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<tr>
<td>EURMT 102</td>
<td>Engg. Mathematics</td>
<td>MT</td>
<td>60 40 100</td>
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<tr>
<td>EURPH 103</td>
<td>Engg. Physics - I</td>
<td>BS</td>
<td>60 40 100</td>
<td></td>
<td>4</td>
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<tr>
<td>EURCH 104</td>
<td>Engg. Chemistry – I</td>
<td>BS</td>
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<td></td>
<td>4</td>
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<tr>
<td>EURCS 105</td>
<td>Programming with C</td>
<td>BE</td>
<td>60 40 100</td>
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<td>3</td>
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<tr>
<td>EURCS 113</td>
<td>Programming with C Lab</td>
<td>BE</td>
<td></td>
<td>- 100 100</td>
<td>-</td>
</tr>
<tr>
<td>EURCH 114/214</td>
<td>Engg. Chemistry Lab</td>
<td>BS</td>
<td>- 100 100</td>
<td></td>
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<tr>
<td>EUREE 118/218</td>
<td>Electrical &amp; Electronics Lab</td>
<td>BE</td>
<td>- 100 100</td>
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<td></td>
<td>Total:</td>
<td></td>
<td>300 500 800</td>
<td>18 - 09 27 24</td>
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**B.Tech. (CSE) Second Semester**

<table>
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<tr>
<th>Course Code</th>
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<th>Credits to be awarded</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Semester End Exam</td>
<td>Con. Eval.</td>
<td>Total</td>
</tr>
<tr>
<td>EUREG 201</td>
<td>Engg. English – II</td>
<td>HS</td>
<td>60 40 100</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>EURMT 202</td>
<td>Higher Engineering Mathematics – I</td>
<td>MT</td>
<td>60 40 100</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>EURMT 203</td>
<td>Higher Engineering Mathematics – II</td>
<td>MT</td>
<td>60 40 100</td>
<td></td>
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<tr>
<td>EURPH 204</td>
<td>Engg. Physics – II</td>
<td>BS</td>
<td>60 40 100</td>
<td></td>
<td>3</td>
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<tr>
<td>EURCH 205</td>
<td>Engg. Chemistry – II</td>
<td>BS</td>
<td>60 40 100</td>
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<tr>
<td>EURCS 206</td>
<td>Object Oriented programming with C++</td>
<td>BE</td>
<td>60 40 100</td>
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<tr>
<td>EURPH 212/112</td>
<td>Engg. Physics Lab</td>
<td>BS</td>
<td></td>
<td>- 100 100</td>
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</tr>
<tr>
<td>EURCS 213</td>
<td>Object oriented programming with C++ Lab</td>
<td>BE</td>
<td></td>
<td>- 100 100</td>
<td>-</td>
</tr>
<tr>
<td>EURME 215/115</td>
<td>Engineering Graphics Practice</td>
<td>BE</td>
<td></td>
<td>- 100 100</td>
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<td></td>
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<td></td>
<td>360 540 900</td>
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### B.Tech. (CSE) Third Semester

<table>
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<th>Course Code</th>
<th>Subject</th>
<th>Category</th>
<th>Marks</th>
<th>Hours per week</th>
<th>Credits to be awarded</th>
</tr>
</thead>
<tbody>
<tr>
<td>EURCS 301</td>
<td>Fundamentals of Electronics and Electrical Circuits</td>
<td>BE</td>
<td>60 40 100</td>
<td>3 1 - 4</td>
<td>4</td>
</tr>
<tr>
<td>EURCS 302</td>
<td>Probability and Statistics</td>
<td>MT</td>
<td>60 40 100</td>
<td>3 - - 3</td>
<td>3</td>
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<tr>
<td>EURCS 303</td>
<td>Discrete mathematical Structures</td>
<td>CE</td>
<td>60 40 100</td>
<td>3 - - 3</td>
<td>3</td>
</tr>
<tr>
<td>EURCS 304</td>
<td>Data Structures</td>
<td>CE</td>
<td>60 40 100</td>
<td>3 1 - 4</td>
<td>4</td>
</tr>
<tr>
<td>EURCS 305</td>
<td>Switching Theory and Logic Circuits</td>
<td>CE</td>
<td>60 40 100</td>
<td>3 - - 3</td>
<td>3</td>
</tr>
<tr>
<td>EURCS 311</td>
<td>Data Structures Lab</td>
<td>CE</td>
<td>- 100 100</td>
<td>- - 3 3</td>
<td>2</td>
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<tr>
<td>EURCS 312</td>
<td>Electrical &amp; Electronics Lab</td>
<td>BE</td>
<td>- 100 100</td>
<td>- - 3 3</td>
<td>2</td>
</tr>
<tr>
<td>EURCS 313/ EURIT 313</td>
<td>Advanced Communication Skills and English Language Lab</td>
<td>HS</td>
<td>- 100 100</td>
<td>4 4 2</td>
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<td><strong>Total</strong></td>
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<td></td>
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### B.Tech (CSE) Fourth Semester

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Subject</th>
<th>Category</th>
<th>Marks</th>
<th>Hours per week</th>
<th>Credits to be awarded</th>
</tr>
</thead>
<tbody>
<tr>
<td>EURCS 401/ EURIT 401</td>
<td>Computer Organization</td>
<td>CE</td>
<td>60 40 100</td>
<td>3 1 - 4</td>
<td>4</td>
</tr>
<tr>
<td>EURCS 402/ EURIT 402</td>
<td>Environmental studies</td>
<td>HS</td>
<td>60 40 100</td>
<td>3 1 - 4</td>
<td>4</td>
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<tr>
<td>EURCS 403</td>
<td>Programming with JAVA</td>
<td>BE</td>
<td>60 40 100</td>
<td>3 1 - 4</td>
<td>4</td>
</tr>
<tr>
<td>EURCS 404</td>
<td>Operating Systems</td>
<td>CE</td>
<td>60 40 100</td>
<td>3 - - 3</td>
<td>3</td>
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<tr>
<td>EURCS 405/ EURIT 405</td>
<td>Software Engineering</td>
<td>CE</td>
<td>60 40 100</td>
<td>3 1 - 4</td>
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<tr>
<td>EURCS 411</td>
<td>Programming with JAVA Lab</td>
<td>BE</td>
<td>- 100 100</td>
<td>- - 3 3</td>
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<tr>
<td>EURCS 412</td>
<td>Operating Systems Lab</td>
<td>CE</td>
<td>- 100 100</td>
<td>- - 3 3</td>
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<td>EURCS 413</td>
<td>Computer Engineering Workshop</td>
<td>CE</td>
<td>- 100 100</td>
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<td>Category</td>
<td>Marks</td>
<td>Hours per week</td>
<td>Credits to be awarded</td>
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<td>EURCS 501</td>
<td>Advanced Computer Architecture</td>
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<td>3 1 - 4</td>
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<tr>
<td>EURCS 502/</td>
<td>Object Oriented Analysis &amp; Design</td>
<td>CE</td>
<td>60 40 100</td>
<td>3 - 4</td>
<td>3</td>
</tr>
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<td>EURIT 503</td>
<td>Data Base Management Systems</td>
<td>CE</td>
<td>60 40 100</td>
<td>3 - 3</td>
<td>3</td>
</tr>
<tr>
<td>EURCS 504</td>
<td>Formal Languages &amp; Automata Theory</td>
<td>CE</td>
<td>60 40 100</td>
<td>3 1 - 4</td>
<td>4</td>
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<tr>
<td>EURCS 505</td>
<td>Computer Networks</td>
<td>CE</td>
<td>60 40 100</td>
<td>3 1 - 4</td>
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<tr>
<td>EURCS 511</td>
<td>Computer Networks Lab</td>
<td>CE</td>
<td>- 100 100</td>
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<tr>
<td>EURCS 512</td>
<td>DBMS Laboratory</td>
<td>CE</td>
<td>- 100 100</td>
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<td>EURCS 513</td>
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<td>CE</td>
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**B.Tech. (CSE) Fifth Semester**

<table>
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<tr>
<th>Course Code</th>
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<th>Category</th>
<th>Marks</th>
<th>Hours per week</th>
<th>Credits to be awarded</th>
</tr>
</thead>
<tbody>
<tr>
<td>EURCS 511</td>
<td>Language Processors Lab</td>
<td>CE</td>
<td>- 100 100</td>
<td>3 1 - 4</td>
<td>2</td>
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<tr>
<td>EURCS 602</td>
<td>Design and Analysis of Algorithms</td>
<td>CE</td>
<td>60 40 100</td>
<td>3 1 - 4</td>
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### B.Tech. (CSE) Seventh Semester

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<tr>
<th>Course Code</th>
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<th>Category</th>
<th>Marks</th>
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<td>EURCS 701</td>
<td>Embedded Systems</td>
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<td>60</td>
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<td>EURCS 702</td>
<td>Data Warehousing and Data Mining</td>
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<td>CE</td>
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<td>EURCS 721/725</td>
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### B.Tech. (CSE) Eighth Semester

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<td>EURCS 831/836</td>
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** Inter Departmental Elective will be from other departments. The list of courses that would be offered by the department in any semester will be notified from which the student may select a course.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Name of the Elective</th>
<th>Course Code</th>
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<tbody>
<tr>
<td>EURCS721</td>
<td>Cryptography and Network Security</td>
<td>EURCS821</td>
<td>Cloud Computing</td>
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<td>EURCS722</td>
<td>Image Processing and Pattern Recognition</td>
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<td>EURCS723</td>
<td>Soft Computing</td>
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<td>EURCS724</td>
<td>Distributed Systems</td>
<td>EURCS825</td>
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<td>EURCS725</td>
<td>Design Patterns</td>
<td>EURCS826</td>
<td>Adhoc &amp; Sensor Networks</td>
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### Department Elective – III

<table>
<thead>
<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>EURCS831</td>
<td>Social Network Analysis</td>
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<tr>
<td>EURCS832</td>
<td>Open Source Software Development</td>
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<tr>
<td>EURCS833</td>
<td>Game Programming</td>
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<td>EURCS834</td>
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<tr>
<td>EURCS835</td>
<td>Data Analytics</td>
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<td>Performance Evaluation of Computer Systems</td>
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### Interdepartmental Elective-I

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<tr>
<td>EURCS 751</td>
<td>Remote Sensing &amp; Geographic Information Systems</td>
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<tr>
<td>EURCS 752</td>
<td>System Modeling &amp; Simulation</td>
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<tr>
<td>EURCS 753</td>
<td>Bio-Medical Instrumentation</td>
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<tr>
<td>EURCS 754</td>
<td>Power Electronics</td>
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<td>EURCS 755</td>
<td>Project Planning &amp; Management</td>
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<tr>
<td>EURCS 756</td>
<td>Introduction to Micro Electro Mechanical Systems (MEMS)</td>
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<td>EURCS 757</td>
<td>Entrepreneurship</td>
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<td>EURCS 758</td>
<td>Public Administration</td>
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<tr>
<td>EURCS 759</td>
<td>Fundamentals of Communication Engineering</td>
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<td>EURCS 7510</td>
<td>Equipment in Construction Industry</td>
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<tr>
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<td>EURCS 852</td>
<td>Computer Aided Design</td>
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<td>EURCS 853</td>
<td>Robotics &amp; Automation</td>
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<td>EURCS 854</td>
<td>Mechatronics</td>
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<td>Thermodynamics</td>
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<td>EURCS 856</td>
<td>Digital Signal Processing</td>
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<td>EURCS 857</td>
<td>Electronic Measurement &amp; Instrumentation</td>
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<tr>
<td>EURCS 858</td>
<td>Very Large Scale Integrated System Design (VLSI)</td>
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<td>EURCS 859</td>
<td>Fundamentals of Civil Engineering</td>
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<td>EURCS 8510</td>
<td>Engineering Materials</td>
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### B.Tech. (CSE)

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</table>
Unit – I:
Introduction to Communication: Role and Importance of Communication, Features of Human Communication, Process of Communication, Types of Communication: Verbal and Non-Verbal Importance of Listening in Effective Communication, Barriers to Communication

Unit – II:
Effective Vocabulary: Words Often Confused, One-word Substitutes, Idiomatic Usage, Using Dictionary and Thesaurus

Unit – III:
Functional Grammar: Functions: Making proposals, Offering suggestions, Apologizing, Requesting, Offering and Refusing help, Giving and asking for information, Making complaints, Interrupting, Giving and asking directions, Inviting, Asking Permission, Expressing ability, etc., Articles, Prépositions, Tenses, Concord

Unit – IV:
Communication through Writing: Paragraph writing, Communication through letters: official and personal letters, letters of complaint, letters of enquiry and responses. Résumé writing, Cover letters, E-mail etiquette, Punctuation

Unit – V:
Reading for Enrichment: Sachin Tendulkar, Michael Jackson

Text Books:
1. E. Suresh Kumar et al., Enriching Speaking and Writing Skills, Orient Blackswan, 2012.

Reference Books:
UNIT-I:

First order Differential Equations


UNIT-II:

Higher order Differential Equations


UNIT-III:

Mean Value Theorems

Rolle’s, Lagrange’s and Cauchy’s mean value theorems. Taylor’s and Maclaurin’s theorems and applications (without proofs).

UNIT-IV:

Infinite Series


UNIT-V:

Linear Algebra


TEXT BOOKS:

2. Engineering Mathematics Vol.-1,Dr.T.K.V.Iyengar,S.Chand.

REFERENCE BOOKS:

Unit-I:


Unit-II:

**ELECTROMAGNETIC OSCILLATIONS AND ALTERNATING CURRENTS:** Energy stored in a capacitor and an Inductor – LC Oscillations (Qualitative and Quantitative) – Analogy to Mechanical Motion – Damped Oscillations – Damped Oscillations in an RLC circuit – Alternating Current (Including Equations for Voltages and Currents) – Fundamental Definitions – (Cycle, Time Period, Frequency, Amplitude, Phase, Phase Difference, Root Mean Square (RMS) Value, Average Value, Form Factor, Quality Factor, Power in Alternating Current Circuits) – Forced Oscillations and Resonance – The Series RLC Circuit.


Unit-III:


Unit-IV:


Unit-V:

**SUPERCONDUCTIVITY:** Introduction – BCS Theory – Meissner Effect – Properties of Superconductors – Type-I and Type-II Superconductors – High TC Superconductors – Applications.

**ULTRASONICS:** Introduction – Production of Ultrasonics by Magnetorestriction and Piezo-electric effects – Detection and Applications of Ultrasonics.

**Text Books:**


**Reference Books:**

Unit – I:

WATER TECHNOLOGY - SOURCES AND PURIFICATION OF WATER:

Unit – II:

WATER TECHNOLOGY-SOFTENING METHODS AND BOILER TROUBLES:

Unit – III:

SURFACE CHEMISTRY AND NANOCHEMISTRY:
Colloids: Types of Colloids – Preparation of Colloidal solutions – Micelles – Applications of Colloids
Adsorption : Classification – Adsorption of Gasses on solids - Applications of Adsorption

Unit – IV:

POLYMERS:

Unit – V:

ENGINEERING MATERIAL SCIENCE:
Refractories:– Classification - criteria of a good refractory. Preparation and properties of silica, magnesite and silicon carbide refractories - clay bond, silica nitride bond and self bond in silicon carbide.
Ceramics: – Structural clay products, white wares and Chemical stone wares.
Cement: Chemical composition of Portland cement, Manufacture- Setting and Hardening of Cement.

Text Books:

Reference Books:
UNIT – I
Algorithm, flowchart, program development steps, structure of C program, Compilers, Linker, Preprocessor, identifiers, basic data types and sizes, Constants, variables, operators, expressions, type conversions, conditional expressions, precedence and order of evaluation. Input-output statements, statements and blocks, programming examples.

UNIT – II
Control Structures: if and switch statements, loops- while, do-while and for statements, break, continue, goto and labels.
Designing structured programs, Functions, basics, parameter passing, block structure, user defined functions, standard library functions, recursive functions, Comparison of Iteration and Recursion, header files, C preprocessor, storage classes- extern, auto, register, static, scope rules, example c programs.

UNIT – III
Arrays: concepts, declaration, definition, accessing elements, storing elements, arrays and functions, two-dimensional and multi-dimensional arrays, applications of arrays.
Pointers: concepts, initialization of pointer variables, pointers and function arguments, address arithmetic, Character pointers and functions, pointers to pointers, pointers and multidimensional arrays, dynamic memory management functions, command line arguments, c program examples.

UNIT – IV
Strings: What are Strings, Arrays of Strings and Standard Library String Functions.
Derived types: structures- declaration, definition and initialization of structures, accessing structures, nested structures, arrays of structures, structures and functions, pointers to structures, self referential structures, unions, typedef, bitfields, C program examples.

UNIT – V
Input and output - concept of a file, , File Structure, text files and binary files, streams, standard I/O, Formatted I/O, file I/O operations, error handling, C program examples.

Text Book:

Reference Books:
1. Programming with ANSI and Turbo C by Ashok N. Kamthane, published by PEARSON Education
1. a) Write a C program to ask the user to enter one char (Upper-Case letter) check whether user entered a Upper-case letter or not(by using relational and logical operators) and then if user has entered a Upper-case letter convert into a Lower-case letter? (hint: Upper-case means capital letters, use ASCII information to check for Upper-case and convert)  
   b) Write a C program to ask the user to enter two integers and apply all arithmetic operations on those print the corresponding values?(hint : +,-,*,,/,%)
   c) Write a C program to Determine the ranges of char, short, int and long int variables both signed and Unsigned

By using sizeof operator(ii) By printing appropriate values from standard header (limits.h )

2. a) Write a Program to Find the Roots of a Quadratic Equation using if else and Switch statements.
   b) Write a Program which Generates One Hundred Random Integers in the Range of 1 To 100, store them in an array and then prints the average. Write three versions of the program using Different Loop Constructs.

3. a) Write a C program to find the sum of individual digits of a positive integer.
   b) A Fibonacci Sequence is defined as follows: the first and second terms in the sequence are 0 and 1. Subsequent terms are found by adding the preceding two terms in the sequence. Write a C program to generate the first n terms of the sequence.
   c) Write a C program to calculate the following

   \[ \text{Sum}=1-x^2/2! +x^4/4!-x^6/6!+x^8/8!-x^{10}/10! \]

4. a) Write a C program to generate all the prime numbers between 1 and n, where n is a value supplied by the user.
   b) Write C programs that use both recursive and non-recursive functions

   i) To find the factorial of a given integer.
   ii) To find the GCD (greatest common divisor) of two given integers.
   iii) To solve Towers of Hanoi problem.

5. a) Write a C program to find both the largest and smallest number in a list of integers.
   b) Write a program to read set of elements in the array and sort them in ascending order.
   c) Write a C program that uses functions to perform the following:

   i) Addition of Two Matrices
   ii) Multiplication of Two Matrices
   iii) Transpose of a given Matrix

6. a) Write a C program that uses functions to perform the following operations:

   i) To insert a sub-string in to given main string from a given position.
   ii) To delete n Characters from a given position in a given string.
   b) Write a C program to determine if the given string is a palindrome or not
   c) Given an Array of Strings Write a Program to Sort the String in Dictionary Order.

7. Write a C program that uses functions to perform the following operations:

   i) Reading a complex number
   ii) Writing a complex number
   iii) Addition of two complex numbers

8. Write a C program that uses functions to perform the following operations:

   a) Count number of characters, words in a file.
   b) Write a C program to reverse the first n characters in a file.
      (Note: The file name and n are specified on the command line.)
   c) Write a C program which copies one file to another.

9. Write a program to print the details of employees of a organization like(Name, DateOfJoin, Salary) using nested structures

10. Construct a program for managing membership of library using structures. Write a program that accepts the code number and duration of books borrowed and displays the name and other information of all those members having dues.
The objective of the Laboratory Practicals is to make the student to acquire the basic Concepts on Engineering Chemistry.

2. Determination of sodium carbonate in soda ash.
4. Estimation of Calcium on Portland cement.
6. a) Estimation of Active Chlorine Content in Bleaching Power.
   b) Determination of Hardness of a Ground Water Sample.
7. Determination of Chromium (VI) in Potassium Dichromate
8. Determination of Copper in a Copper Ore.
   b) Determination of Surface Tension of a Liquid.
10. a) Determination of Mohr’s Salt by potentiometric method.
    b) Determination of Strength of an acid by pH metric method.
## B.Tech. (CSE) First Semester

### ELECTRICAL & ELECTRONICS WORKSHOP

**Code:** EUREE 118/218  
**Category:** BE  
**Credits:** 2  
**Department:** CSE  
**Hours:** 3 per week

### List of Experiments

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| 1. | a. Study of Electrical Symbols  
    | b. Study of Electrical Components                              |
| 2. | a. One way Control of a Lamp  
    | b. Two way Control of a Lamp                                   |
| 3. | A Lamp controlled from three different places                  |
| 4. | Study of Cathode Ray Oscilloscope & Signal Generator           |
| 5. | Study of Electronics Components with Symbols                   |
| 6. | Tube Light wiring                                              |
| 7. | Bread Board connections                                        |
| 8. | Half Wave Diode Rectifier                                      |
| 9. | Living Room wiring                                             |
| 10 | Godown wiring                                                  |
| 11 | Verification of OHMS law                                       |
| 12 | Soldering & De – Soldering Techniques & Precautions            |
| 13 | Fan wiring                                                     |
| 14 | Doctors Room wiring                                            |
| 15 | Series & Parallel Connections of Lamps ( Dim & Bright connections ) |
| 16 | PCB Design                                                     |
B.Tech. (CSE) Second Semester
ENGINEERING ENGLISH-II

Code: EUREG 201
Credits: 3
Department: CSE

Category: HS
Hours: 3 per week

Unit – I:
Interpersonal Communication:
Introduction to Interpersonal Communication, Models of Interpersonal Relationship Development, Team Work, Persuasion Techniques

Unit – II:
Spoken Communication:
Importance of spoken communication, Basics of Spoken English
Situational Dialogues, Speech Making: Formal and Informal

Unit – III:
Developing Vocabulary and Correcting Common Errors:
Homonyms, Homophones and Homographs, Synonyms and Antonyms
Oral and Written

Unit – IV:
Information Transfer:
Using charts, Figures, Tables, Pictograms, Maps, Note Making
Note Taking

Unit – V:
Reading for Enrichment
Sir Mokshagundam Visvesvaraya
Steve Jobs: The Early Years

Text Book:
1. E. Suresh Kumar et al., Communication for Professional Success, Orient Blackswan, 2012.

Reference Books:
B.Tech. (CSE) Second Semester
HIGHER ENGINEERING MATHEMATICS – I

Code: EURMT202
Category: MT
Credits: 3
Department: CSE
Hours: 3 per week

Unit-I:
Partial Differentiation-1
Introduction to Partial differentiation - Total derivative - Differentiation of implicit functions - Geometrical interpretation - Tangent plane and normal to a surface - Change of variables - Jacobians.

Unit-II:
Partial differentiation-2
Taylor’s theorem for functions of two variables. Total differential - Maxima and minima of functions of two variables - Lagrange’s method of undetermined multipliers - Differentiation under the integral sign, Leibnitz’s Rule.

Unit-III:
Fourier Series
Euler’s formulae - Conditions for a Fourier expansion - Functions having points of discontinuity - Change of interval - Odd and even functions - Expansions of odd or even periodic functions - Half range series and practical Harmonic Analysis.

Unit-IV:
Partial differential equations

Unit-V:
Applications of Partial Differential Equations

Text Books:
2. Engineering Mathematics Vol.-1, Dr. T.K.V. Iyengar, S. Chand.

References:
B.Tech. (CSE) Second Semester

HIGHER ENGINEERING MATHEMATICS – II

Code: EURMT203                                               Category: MT
Credits: 3                                                 Hours: 3 per week
Department: CSE

Unit-I
Multiple Integrals-I
Double integrals- Change of order of integration, Double integrals in Polar coordinates- Areas enclosed by plane curves

Unit-II
Multiple Integrals-II
Triple integrals - Volume of solids - Change of variables - Area of a curved surface. Beta and Gamma functions – Properties - Relation between beta and gamma functions – Dirichlet’s integrals of type I and type II.

Unit-III
Vector Differentiation
Scalar and vector fields - Gradient, Divergence and Curl - Directional derivative – Identities - Irrotational and Solenoidal fields.

Unit-IV
Vector Integration
Line, Surface and Volume integrals - Green’s theorem in the plane - Stoke’s and Gauss divergence theorems - Introduction of orthogonal curvilinear co-ordinates, Cylindrical co-ordinates and Spherical polar co-ordinates

Unit-V
Laplace transforms
Transforms of elementary functions - Properties of Laplace transforms - Existence conditions - Inverse transforms - Transforms of derivatives and integrals - Multiplication by \( t^a \) - Division by \( t \) - Convolution theorem. Applications to ordinary differential equations and simultaneous linear equations with constant coefficients - Unit step function - Unit impulse function - Periodic functions.

Text Books:

References:
<table>
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<th>UNIT – I</th>
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<tr>
<td>DIFFRACTION: Introduction - Differences between Fresnel and Fraunhofer Diffractions - Single Slit Diffraction (Qualitative and Quantitative Treatment) - Differences between Interference and Diffraction - Gratings and Spectra - Multiple Slits - Diffraction Grating - X-ray Diffraction - Bragg’s Law.</td>
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<table>
<thead>
<tr>
<th>UNIT – III</th>
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<tr>
<th>UNIT – V</th>
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</thead>
<tbody>
<tr>
<td>FIBRE OPTICS: Introduction - Optical Paths in Fibre - Optical Fibre and Total Internal Reflection - Acceptance Angle and Cone of a Fibre - Fibre Optics in Communications - Applications.</td>
</tr>
<tr>
<td>NANOSCIENCE: History – Definition - Size Dependent Properties (Qualitative): Mechanical and Electrical - Growth Techniques: Top Down (PVD, Ball Milling) - Bottom Up (Sol-Gel and Co-Precipitation) - Applications.</td>
</tr>
</tbody>
</table>

**Text Books:**

**Reference Books:**
5. The Feynman Lectures on Physics, Addison-Wesley.
UNIT-I.

NON-CONVENTIONAL ENERGY SOURCES AND APPLICATIONS:


Solar: Photoelectric cells – Applications of Solar Cells

UNIT-II.

CORROSION ENGINEERING:


UNIT-III.

FUEL TECHNOLOGY: CALORIFIC VALUE AND SOLID FUELS:


UNIT-IV.

FUEL TECHNOLOGY : LIQUID FUELS:

Refining of Petroleum - Petroleum products used as Fuels - Gasoline - Knocking and Octane Number of Gasoline, Synthetic Petrol – Bergius and Fisher Tropsch methods. Diesel - Cetane Number, High speed and low speed Diesel oil. - Power Alcohol: Manufacture, Advantages and Disadvantages - LPG.

UNIT-V.

LUBRICANTS :

Classification- Properties- Viscosity and Oiliness, Flash and Fire - Points, Cloud and Pour - Points. Aniline point, Saponification number – Carbon residue, Emulsification number volatilities, precipitation number, specific gravity, neutralization number. Principles and Mechanism of Lubrication - Fluid Film, Boundary and Extreme - Pressure Lubrications.

Text Books:


Reference Books:

UNIT-I


C++ Basics: Keywords, Constants, Data Types, Dynamic Initialization of Variables, Reference Variables, Operators in C++.

C++ Class Overview: Class Definition, Objects, Class Members, Access Control, Class Scope

UNIT-II

Parameter passing methods, static class members, this pointer, Arrays of Objects, Objects as Function Arguments, Default Arguments, Constant Arguments, Inline functions, Function Overloading, Friend Functions, Dynamic memory allocation and deallocation (new and delete)

UNIT-III

Constructors, Parameterized Constructors, Multiple Constructors in a Class, Constructors with Default Arguments, Dynamic initialization of Objects, Copy Constructors, Dynamic Constructors, Destructors.

Introduction to inheritance, Defining Derived Classes, Single Inheritance, Multiple Inheritance, Multi-Level Inheritance, Hierarchical Inheritance, Hybrid Inheritance, Virtual Base Classes, Abstract Classes, Constructors in Derived Classes.

UNIT-IV

Introduction to pointers, Pointers to Objects, Pointers to Derived Classes, compile time polymorphism, Run time polymorphism, Virtual Functions, Pure Virtual Functions, Virtual Destructors, this Pointer, Operator overloading, Rules for Operator overloading, overloading of binary and unary operators.

Files in C++: File I/O, Unformatted and Binary I/O.

UNIT-V

Introduction, Class Templates, Class Templates with Multiple Parameters, Function Templates, Function Templates with Multiple Parameters, Member Function Templates.

Basics of Exception Handling, Types of exceptions, Exception Handling Mechanism, Throwing and Catching Mechanism, Rethrowing an Exception, Specifying Exceptions.

Text Book:

   Behrouz A. Forouzan and Richard F. Gilberg

Reference Books:

2. Object-Oriented Programming with ANSI and Turbo C++, 1/e By Ashok Kamthane
3. Problem Solving, Abstraction, and Design using C++ (6TH 11)
   Frank L. Friedman
2. Thermal Conductivity of a Bad Conductor – Lee’s Method.
10. Determination of Refractive Indices (o and e) of a Bi-Refringent Material (Prism).
15. Determination of Band Gap in a Semiconductor.
17. VI Characteristics of a pn-junction diode
18. Response of a series RLC Circuit

***
1. Write a CPP program that contains a function to exchange values of two arguments (swap) by using pointers and reference parameters.
2. Write a CPP program to find the given string is palindrome or not. Declare private member function to find palindrome of the given string and access it using public member function.
3. Write a CPP program to find transpose of 2D matrix and allocate memory dynamically to the matrix using dynamic memory allocation. Initialize and display contents of the matrix and deallocate memory.
4. Write a CPP program to add two polynomials of any degree using object as function arguments. Hint: create two objects each represent one polynomial equation.
5. Write a CPP program to add corresponding elements of two 2D matrices using friend function. Create two classes each capable of storing one 2D matrix. Declare the matrix under private access specifier and access them outside the class.
6. Write a program to find total and average marks of each student in class. Create a student class with student number, name, 6 subject marks as its members and initializes the details. Use friend class that access the details of student and calculates total, average marks and prints the result.
7. Write a program to add two matrices of same copy. Create two objects of the class and each of which refers one 2D matrix. Use constructor to allocate memory dynamically and use copy constructor to allocate memory when one array object is used to initialize another.
8. Write a Program to Generate Fibonacci Series by using Constructor to Initialize the Data Members.
9. Write a program for finding area of different geometric shapes (circle, Rectangle, cube). Use function overloading with type, order, sequence of arguments to find the area of shapes.
10. Write a program which prompts the user to enter a string and returns the length of the longest sequence of identical consecutive characters within the string using pointers to data members and member function. For example, in the string "aaaAAAAAjjB", the longest sequence of identical consecutive characters is "AAAAA".
11. Write a program to calculate gross and net pay of employee from basic salary. Create employee class which consists of employee name, emp_id, and basic salary as its data members. Use parameterized constructor in the derived class to initialize data members of the base class and calculate gross and net pay of the employee in the derived class.
12. Write a program to calculate bonus of the employees. The class master derives the information from both admin and account classes which intern derives information from class person. Create base and all derived classes having same member functions called getdata, display data and bonus. Create a base class pointer that capable of accessing data of any class and calculates bonus of the specified employee. (Hint: Use virtual functions)
13. Write a program to add two matrices of m x n size using binary operator overloading.
14. Write a program to find transpose of a given matrix of m x n size using unary operator overloading.
15. Write a program to concatenate one string to another using binary operator overloading.
16. Write a program that uses functions to perform the following operations:
   a) To copy contents of one file into another file.
   b) To replace a word with other word in a given file?
   c) To count the no of occurrences of a word in a given file
17. Write a program to sort a given set of elements using function template.
18. Write a program to search a key element in a given set of elements using class template.
19. Write a program to find average marks of the subjects of a student. Throw multiple exceptions and define multiple catch statements to handle division by zero as well as array index out of bounds exceptions.
20. Write a program to find factorial of a given number. Throw multiple exceptions and define multiple catch statements to handle negative number and out of memory exception. Negative number exception thrown if given number is negative value and out of memory exception is thrown if the given number is greater than 20.
1. Introduction to AutoCAD, Beginning a new drawing, exploring and interacting with the drawing window, saving and opening a file, Coordinate systems (Cartesian, polar and relative co-ordinate system)

2. Introduction to draw commands – line, circle, rectangle, polygon etc.

3. Introduction to modify commands – extend, trim, chamfer, rotate, etc.

4. Introduction to dimensioning and object properties.


6. Projection of planes

7. Sections and sectional views of solids – prism, pyramid, cylinder, cone


9. Intersection of solids- prism to prism, cylinder to cylinder

***
B.Tech. (CSE)/Third Semester
FUNDAMENTALS OF ELECTRONICS & ELECTRICAL CIRCUITS

Code: EURCS 301  
Category: BE  
Credits: 4  
Hours: 4 per week  
Department: CSE

UNIT - I:

BASICS OF ELECTRICAL ENGINEERING: ohm’s law, kvl and kcl, nodal analysis, mesh analysis, series and parallel combination of resistors, thevenin’s theorem, norton’s theorem, superposition theorem

UNIT - II:

BASICS OF ELECTRONICS: classification of materials, semiconductors, intrinsic and extrinsic semiconductors, pn junction diode, vi characteristics, diode applications as rectifier, half wave rectifier, full wave rectifier, bridge rectifier, BJT formation and operation, JFET characteristics, MOSFET depletion

UNIT- III:

BJT as an amplifier h parameter model, CE, CB, CC amplifier and analysis, negative feedback concepts, advantages and disadvantages of negative feedback amplifiers, positive feedback, theory operation of RC phase shift, wein bridge, crystal oscillators

UNIT –IV:

Definitions: Sinusoidal sources, average and RMS values, form factor, power factor, active and reactive power  
AC Machines: 3Phase induction motor, construction details, slip-torque characteristics, single phase induction motors, principle. single phase transformers, operation, equivalent circuit of transformers

UNIT -V:

DC Machines: Construction and working principle of dc machine, emf equation, types of excitation, characteristics of series, shunt and compound generators, dc motor characteristics, construction, losses and efficiency

Text Books:

1. Basic Electronics – VK Mehta  
2. Electrical Technology Volume 2 – B L Thereja

Reference Books:

1. Integrated Electronics – Millman and Halkias  
2. Electronics and Devices – C Dharma Raj and B. T. Krishna  
3. Introduction to Electrical Engineering – M.S. Naidu and S. Kamakshaiah
UNIT – I

**Probability:** Definitions of Probability, addition theorem, conditional Probability, Multiplication theorem, Baye’s theorem of Probability and Geometric Probability. Random Variables and their properties, Discrete Random Variable, Continuous Random Variable, Probability Distribution, Transformation variables, Mathematical expectations, Probability generating functions, Probability distribution / Discrete distributions : Binomial , Poisson , negative binomial distributions and their properties. (Definition, mean, variance, moment generating function, additive properties, fitting of the distribution)

UNIT – II

**Continuous distributions:** Uniform, normal exponential distributions and their properties, rectangular distribution and its properties. Curve fitting – Principle of least squares, method of least squares, working procedure, Fitting of other curves.

UNIT – III

**Multivariate Analysis:** Correlation, correlation coefficient, Rank correlation, Regression analysis, $\chi^2$ – test for goodness of fit, test for independence. Estimation : Sample, populations, statistic, parameter, sampling distribution, standard error, unbiasedness, efficiency, maximum likelihood estimator, notion & interval estimation.

UNIT – IV

**Testing of Hypothesis:** Formulation of Null Hypothesis, critical regions, level of significance, and power of the test.

UNIT – V

**Small sample Tests:** Testing equality of means, testing equality of variances, test of correlation coefficients, test for regression coefficient.  
**Large sample Tests:** Tests based on Normal distribution.

**Text Book:**


**Reference Books:**

1) Probability Statistics with Reliability, Queuing and Computer Science Application, Kishar , S. Trivedi, PHI Publication.  
B.Tech. (CSE)/Third Semester
Discrete Mathematical Structures

Code: EURCS 303
Category: CE
Credits: 3
Department: CSE
Hours: 3 per week

Unit-I


Unit-II

Principles of counting, Combinations and Permutations with/without repetitions, Multinomial Theorem, Generating Functions of Sequences, Calculating Coefficients of Generating Functions, Recurrence Relations, Types of Recurrence Relations, Solving Linear Recurrence Relations by Substitution Method, Generating Functions, Characteristic Roots, Solving Systems of Recurrence Relations, Solving Non-Linear Recurrence Relations.

Unit-III


Unit-IV


Unit –V


Text Books:

2. Discrete Mathematical Structures with applications to Computer Science Trembly J.P. & Manohar P. TMH

Reference Books:

B.Tech. (CSE)/Third Semester
DATA STRUCTURES

Code: EURCS 304
Category: CE
Credits: 4
Hours: 4 per week
Department: CSE

UNIT – I

Data representation: Introduction, linear lists, formula based representation, indirect addressing, simulating pointers, comparisons and applications. Introduction to running time analysis, space complexity analysis, Arrays, matrices, sparse matrices.

UNIT – II

Linked lists: Creation of single linked list, double linked list, circular linked list, and operations on it. Stacks: definitions, operations and applications, array and linked representation of stacks. Queues: definitions and operations. Array and linked representation of queues. Applications.

UNIT – III


UNIT – IV

Searching: Linear search, Binary search, Fibonacci Search Hashing: Various types hashing, and different collision resolution techniques.

UNIT – V

Introduction to Sorting: Insertion Sort, Selection Sort, Bubble Sort, Merge sort, Quick Sort, Heap Sort, Bucket Sort, Radix Sort, Shell Sort, Topological Sorting.

Text Books:


Reference Books:

1. Introduction to Algorithms, Thomas H. Cormen, MIT Press
B.Tech. (CSE) Third Semester
Switching Theory and Logic Circuits

Code: EURCS 305
Credits: 3
Category: CE
Department: CSE
Hours: 3 per week

UNIT-I

Number Representation: Positional representation of numbers, decimal, binary, octal, Hexadecimal number systems, general radix ‘r’ system, numbers, conversions, complements, binary codes, arithmetic with signed unsigned numbers (addition, subtraction), Introduction to error correction and error detection.

UNIT-II

Introduction to logic circuits: Variables and functions, truth tables, logic gates and networks, Boolean algebra, synthesis using AND, OR and NOT gates, NAND and NOR logic networks, Introduction to CAD tools, introduction to Verilog.

UNIT-III

Optimized implementation of logic functions: Karnaugh map, strategy for minimization, minimization of product of sums forms, incompletely specified functions, multiple output circuits, multilevel synthesis, a tabular method for minimization, cubical technique for minimization, practical considerations, and CAD tools.

UNIT-IV

Combinational logic: Design procedures, adders, subtractors, design of arithmetic circuits using CAD tools, multiplexers, demultiplexers, encoders, decoders, priority encoder, code converters, seven segment display, Programmable Logic Devices-PAL, PLA, Verilog for combinational circuits.

UNIT-V

Sequential circuits: Flip flops, basic latch, gated SR latch, gated D latch, Master-slave and edge triggered D flip flop, T flip flop, JK flip flop, registers, shift registers, counters—synchronous and asynchronous counters, other types of counters—BCD counter, Ring counter, Johnson counter, using storage elements with CAD tools, using registers and counters with CAD tools.

Text Books:

2. Digital Design by Morris Mano published by Pearson Education.

Reference Book:

1. Linked lists - creation, insertion, deletion of single, double and circular lists.
2. Stack and Queue - operations using arrays and linked lists.
3. Perform the following tasks by using Stacks
   i) Infix to postfix conversion
   ii) Evaluation to postfix expression.
   iii) Checking of Nested Balanced Parenthesis
4. Perform operations (insertion and deletion) on Double Ended Circular Queues
5. Create a Binary tree and traverse it by using: In-order, pre-order, post-order with or without using recursion
6. Create a Binary Search Tree and perform Insertion and Deletion Operations on it.
7. Binary search with or without using recursion
8. Sort 'n' elements by using – insertion, selection, Quick sort, Merge Sort Heap Sort
9. Perform Addition, multiplication of two sparse matrices and find the transpose of given Sparse Matrix
10. Polynomial addition and multiplication by using arrays and linked lists
11. Program to represent a graph by using Adjacency Matrix and Adjacency Lists representation for the given set of Vertices and Edges. And traverse it by using Breadth First Traversal and Depth First Traversal techniques
12. Create an AVL Tree and perform insertion and deletion operations.
13. Create a Splay Tree and perform insertion and deletion operations.
14. Create a B-Tree of order greater than or equal to 4 and perform insertion and deletion operations.
15. Program to demonstrate the concepts of
   i) Separate Chaining
   ii) Open Addressing (use appropriate collision resolution techniques)
   iii) Extendable Hashing

NOTE:

Detailed description of problems is to be given by the instructor before or at the time of instruction.
1. Characteristics of semiconductor and zener diodes.
2. Fullwave rectifier with and without filters.
3. CRO Application
4. Static characteristics of BJT and FET
5. RC coupled amplifier
6. Oscillators-RC phase shift and wiens bridge
7. LC oscillators
8. Operational amplifiers-applications
9. Schmitt trigger
10. Feedback amplifiers
11. Simulations of above circuits using PSPICE.

**Note:**
1. Detailed specification for each of the experiments with the above titles is to be formulated by the instructor and given to the learners before or at the time of commencement of instruction.
2. Number of experiments under each title may not be limited to ONE.
B.Tech. (CSE) Third Semester
ADVANCED COMMUNICATION SKILLS AND ENGLISH LANGUAGE LAB

Code: EURCS 313
Category: HS
Credits: 2
Hours: 4 per week
Department: CSE

Unit – I

Report writing: Types of reports, Writing technical reports and scientific papers, writing a Statement of Purpose

Unit – II

Presentation Skills: Make effective presentations, expressions which can be used in presentations, use of non-verbal communication, coping with stage fright, handling question and answer session, Audio-visual aids, PowerPoint presentations, Seminar Skills

Unit – III

Interview Skills: planning and preparing for interviews, facing interviews confidently, use of suitable expressions during interviews.

Unit – IV

Group Discussion: objectives of a GD; Types of GDs; Initiating, continuing and concluding a GD.

Unit – V

Debate: difference between debate and group discussion, essentials of a debate, conducting a debate.

Telephone Etiquette

English Language Laboratory

Introduction to Phonetic Transcription: Phonemes: Vowels, Consonants and Diphthongs
Syllabification
Weak and Strong Forms
Word Stress

Difficulties of Indian Speakers of English: Sound, Stress and Intonation Problems

Use of Dictionary to Develop Pronunciation: Advantages of using a dictionary, Effective use of dictionary and thesaurus.

Fluency and Continuous Speech: Problems (Fluency Techniques, Pauses, Intonation, Styles of Speech - Formal and Informal)

Text Book:


Reference Books:
UNIT – I

Register Transfer and Micro operations: Register Transfer Language, Register Transfer, Bus and Memory Transfers, Arithmetic Micro-operations, Logic Micro-operations, Shift Micro-operations, Arithmetic Logic Shift Unit.

Computer Arithmetic: Introduction, Addition and Subtraction, Decimal Arithmetic Unit, Booth Multiplication Algorithm

UNIT – II

Basic Computer Organization and Design: Instruction Codes, Computer Registers, Computer Instructions, Timing and Control, Instruction Cycle, Memory-Reference Instructions, Input-Output and Interrupt, Complete Computer Description, Design of the Basic Computer, Design of Accumulator logic.

Microprogrammed Control: Control Memory, Address Sequencing, Microprogram Example, Design of the Control Unit.

UNIT – III

Central Processing Unit: Introduction, General Register Organization, Stack Organization, Instruction Formats, Addressing Modes, Data Transfer and Manipulation, Program Control.

Pipeline and Vector Processing: Parallel processing, Pipelining, arithmetic pipeline, Instruction pipeline

UNIT – IV


UNIT – V

Memory Organization: Memory Hierarchy, Main Memory, Auxiliary Memory (Brief outline of HDD, CD, DVD), Associative Memory, Cache Memory and its performance considerations, Virtual Memory.

Text Books:


Reference Books:

B.Tech. (CSE) Fourth Semester
ENVIRONMENTAL STUDIES

Code: EURCS 402 / EURIT 402
Credits: 4
Category: HS
Department: CSE

Hours: 4 per week

UNIT – I
Multidisciplinary nature of environmental studies & Natural Resources:

UNIT – II
Ecosystems and Biodiversity and its conservation:

UNIT – III

UNIT – IV

UNIT – V

Text Book:
1. Text book of environmental studies for undergraduates courses by Erach Bharucha, Published by – University Grants Commission, Universities Press, India.

References:
UNIT-I


Arrays: One-Dimensional arrays, creating an array, declaration of arrays, initialization of arrays. Two-Dimensional arrays, String arrays, String methods, String Buffer class, Vectors, Wrapper classes. Basic I/O Streams: Scanner, BufferedReader.

UNIT-II

Classes, Objects And Methods

Introduction, Defining a class, Creating objects, Accessing class members, Constructors, Methods overloading, Static members.

Inheritance

Defining a sub class, Sub class constructor, Multilevel variables, Final classes, and Finalize methods, Abstract methods and classes, Visibility control.

Managing Errors And Exceptions

Introduction, Types of Errors: Compile time and Run time errors, Exceptions, Types of Exceptions, Syntax of Exception handling code, multiple catch statements, Using finally statement, Throwing our own exceptions.

UNIT –III

Interfaces, Package & Multithreaded Programming

Introduction, Defining interfaces, Extending Interfaces, Implementing interfaces. Package: Creation, Importing a package.

Introduction to Threads, Creating Threads, Extending the Thread Class, Implementing the ‘Runnable’ Interface, Life cycle of a Thread, Priority of a Thread, Synchronization, and Deadlock.

UNIT – IV

Applet Programming

Introduction, How Applet differ from Applications, Building Applet code, Applet life cycle, About HTML, Designing a Web page, Passing Parameters to Applets, Getting input from the User.

UNIT – V

Graphics Programming

Introduction, Abstract window toolkit (AWT), frames, Event-driven programming, Layout managers, Panels, Canvasses, Drawing Geometric figures.

Creating User Interface

Introduction, Describe various User interface Components: Button, Label, Textfield, Textarea, ChoiceList, Check box, Check box group. Introduction to Networking-Inet address, Socket address, URL.

Text Book:


Reference Books:

2. An Introduction to JAVA Programming by Y. Daniel Liang, TMH
3. JAVA in a Nut Shell by David Flanagan, OReilly Publications.
4. Programming with JAVA (2nd Edition) by Balagurusamy, TMH
UNIT – I

**Introduction:** Introduction to Operating systems, Types of Operating systems: Batch systems, multi programmed systems, timesharing systems, multiprocessor systems, distributed systems, Real-time systems, Operating system Structures: System Components, Operating System Services, System Calls, System Programs, System Structure.

UNIT – II

**Process Management & synchronization:** Process concepts, Process scheduling, threads,
**CPU Scheduling:** scheduling-criteria, algorithms, algorithm evaluation.
**Process Synchronization:** Critical section Problem, synchronization Hardware, Semaphores, classic problems of synchronization, Monitors,
**Case studies** UNIX, Linux, and Windows

UNIT – III

**Deadlock:** System model, deadlock characterization, deadlock prevention, detection and avoidance, recovery from deadlock.
**File system Interface, Implementation:** File concept, Access Methods, Directory structure, protection

UNIT – IV

**Memory Management:** swapping. Contiguous memory allocation, paging, segmentation, segmentation with paging.
**Virtual memory:** demand paging, process creation, page-replacement, algorithms, allocation of frames, thrashing
**Case studies:** UNIX, Linux, Windows.

UNIT – V

**I/O systems:** Hardware, application interface, kernel I/O subsystem, Transforming I/O to Hardware operation, performance, Case studies :UNIX, Linux, Windows.
**Mass-storage structure:** Disk structure, disk scheduling, disk management. Protection:Goals of Protection, Domain of protection, Access Matrix.

**Text Book:**

1. Operating System Concepts with Java, Abraham Silberchatz, Peter B. Galvin, Greg Gagne 8/e , John Wiley

**Reference Books:**

2. Operating System A Design Approach-Crowley, TMH.
4. Operating systems- A Concept based Approach-D.M. Dhamdhere, 2/e, TMH
UNIT I:


UNIT II:

Requirements engineering. Requirements engineering tasks, Initiating Requirements engineering Process, Eliciting Requirements, Building the Analysis Model, Negotiating Requirements, Validating Requirements, Requirements Analysis, Object Oriented Analysis, Scenario-Based Modeling, Flow-Oriented Modeling, Class-Based Modeling.

UNIT III:


UNIT IV:

Testing Strategies. A strategic approach to software testing, strategic issues, test strategies for conventional software, Validation testing, System testing, Testing Tactics, Software testing fundamentals, White-Box testing, Basic Path testing, Control Structure testing, Black-Box testing. Product metrics. Software Quality, A framework for Product Metrics, Metrics for the analysis model, Metrics for the design model, Metrics for source code, Metrics for testing, Metrics for maintenance. Metrics for Process and Products. Software Measurement, Metrics for software quality.

UNIT V:


Text Book:


Reference Books:

1. Develop a program to convert the given temperature in fahrenheit to Celsius

\[ C = \frac{F - 32}{1.8} \]

Using the following conversion formulas and display the values in a tabular form.

2. Develop a program that will take a string from a command line argument and check whether it is a palindrome or not.

3. Develop a program to implement the following string methods.
   a) equals()
   b) compareTo()
   c) substring()
   d) indexOf()
   e) toLowerCase()

4. Given are two one dimensional arrays A and B which are sorted in Ascending order. Write a program to merge them into a single sorted array C that contains every item from arrays A and B in Ascending order.

5. Develop a program by designing a class to represent a bank account. Include the following members:

<table>
<thead>
<tr>
<th>Data Members:</th>
<th>Methods:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of the Depositor</td>
<td>To assign initial values</td>
</tr>
<tr>
<td>Account Number</td>
<td>To deposit an amount</td>
</tr>
<tr>
<td>Type of account</td>
<td>To withdraw an amount after checking balance</td>
</tr>
<tr>
<td>Balance</td>
<td>To display the name and balance</td>
</tr>
</tbody>
</table>

6. Develop a program to demonstrate Constructor Overloading.

7. Develop a program to demonstrate Hierarchical Inheritance using the keyword Super.

8. Develop a program to demonstrate Exception Handling by using THROW, FINALLY & MULTIPLE CATCH statements.

9. Develop a program to demonstrate multiple inheritance through interface.

10. Develop a program to illustrate the concept of extending interfaces.

11. Develop a program to illustrate the concept of multithreading and its methods using Thread class.

12. Develop a program to illustrate the concept of multithreading using Runnable interface.

13. Develop a program to execute the sample Hello Java Applet.

14. Develop an applet that receives three numeric values as input from the user and then display the largest of the three.

15. Develop a program to illustrate the process of Passing Parameters to Applet.

16. Develop an applet that displays different bar charts.

17. Develop an applet to draw the following shapes.
   a) Cone  b) Cylinder  c) Cube  d) Square inside a circle  e) Circle inside a square

18. Develop a program for handling Mouse Events and to display the mouse position when the mouse is pressed.

19. Develop a program to illustrate the concept of Grid Layout.

20. Develop a program to calculate the future value of an investment at a given interest rate for a specified number of years. The formula for the calculation is as follows:

Future value = Investment Amount \((1 + \text{Interest Rate})^\text{years}\). Use text fields for interest rate, investment amount and years. Display the future amount in a text field when clicking the calculate button, or choosing calculate form the operation menu.
Objective:
- To provide an understanding of the design aspects of operating system

Recommended Systems/Software Requirements:
- Intel based desktop PC with minimum of 166 MHZ or faster processor with at least 64 MB RAM and 100 MB free disk space
- C++ compiler and JDK kit

1. Simulate the following CPU scheduling algorithms
   a) Round Robin b) SJF c) FCFS d) Priority

2. Simulate all file allocation strategies
   a) Sequential b) Indexed c) Linked

3. Simulate MVT and MFT

4. Simulate all File Organization Techniques
   a) Single level directory b) Two level c) Hierarchical d) DAG

5. Simulate Bankers Algorithm for Dead Lock Avoidance

6. Simulate Bankers Algorithm for Dead Lock Prevention

7. Simulate all page replacement algorithms
   a) FIFO b) LRU c) LFU Etc. …

8. Simulate Paging Technique of memory management.
PC Hardware

**Week 1 – Task 1**: Every student should disassemble and assemble the PC back to working condition. Lab instructors should verify the work and follow it up with a Viva. Also students need to go through the video which shows the process of assembling a PC. A video would be given as part of the course content.

**Week 2 – Task 2**: Every student should individually install MS windows on the personal computer. Lab instructor should verify the installation and follow it up with a Viva.

**Week 3 – Task 3**: Every student should install Linux on the computer. This computer should have windows installed. The system should be configured as dual boot with both windows and Linux. Lab instructors should verify the installation and follow it up with a Viva.

**Week 4 – Task 4**: Several mini tasks would be that covers Basic commands in Linux and Basic system administration in Linux which includes: Basic Linux commands in bash, Create hard and symbolic links, Text processing, Using wildcards.

**Week 5 – Task 5**: Hardware Troubleshooting: Students have to be given a PC which does not boot due to improper assembly or defective peripherals. They should identify the problem and fix it to get the computer back to working condition. The work done should be verified by the instructor and followed up with a Viva.

**Week 6 – Task 6**: Software Troubleshooting: Students have to be given a malfunctioning CPU due to system software problems. They should identify the problem and fix it to get the computer back to working condition. The work done should be verified by the instructor and followed up with a Viva.

Internet & World Wide Web

**Week 7 - Task 1**: Orientation & Connectivity Boot Camp: Students should get connected to their Local Area Network and access the Internet. In the process they configure the TCP/IP setting. Finally students should demonstrate, to the instructor, how to access the websites and email. If there is no internet connectivity preparations need to be made by the instructors to simulate the WWW on the LAN.

**Week 8 - Task 2**: Web Browsers, Surfing the Web: Students customize their web browsers with the LAN proxy settings, bookmarks, search toolbars and pop up blockers. Also, plug-ins like Macromedia Flash and JRE for applets should be configured.

**Week 9 - Task 3**: Search Engines & Netiquette: Students should know what search engines are and how to use the search engines. A few topics would be given to the students for which they need to search on Google. This should be demonstrated to the instructors.

**Week 10 - Task 4**: Cyber Hygiene: Students would be exposed to the various threats on the internet and would be asked to configure their computer to be safe on the internet. They need to first install an anti virus software, configure their personal firewall and windows update on their computer. Then they need to customize their browsers to block pop ups, block active x downloads to avoid viruses and/or worms.

LaTeX and MS/equivalent (FOSS) tool Power Point

**Week 11 - Task1**: Students will be working on basic power point utilities and tools which help them create basic power point presentation. Topic covered during this week includes :- PPT Orientation, Slide Layouts, Inserting Text, Word Art, Formatting Text, Bullets and Numbering, Auto Shapes, Lines and Arrows in both LaTeX and Powerpoint.

**Week 12 - Task 2**: Second week helps students in making their presentations interactive. Topic covered during this week includes : Hyperlinks, Inserting –Images, Clip Art, Audio, Video, Objects, Tables and Charts.

**Week 13 - Task 3**: Concentrating on the in and out of Microsoft power point and presentations in LaTeX. Helps them learn best practices in designing and preparing power point presentation. Topic covered during this week includes :- Master Layouts (slide, template, and notes), Types of views (basic, presentation, slide slotter, notes etc), Inserting – Background, textures, Design Templates, Hidden slides.
**Week 14 - Task 4**: Entire week concentrates on presentation part of LaTeX and power point. Topic covered during this week includes - Using Auto content wizard, Slide Transition, Custom Animation, Auto Rehearsing Publisher

**Week 15**: Help students in preparing their personal website using Microsoft/ equivalent (FOSS) tool publisher. Topic covered during this week includes - Publisher Orientation, Using Templates, Layouts, Inserting text objects, Editing text objects, Inserting Tables, Working with menu objects, Inserting pages, Hyper linking, Renaming, deleting, modifying pages, Hosting website.

**Reference Books**:

1. Comdex Information Technology course tool kit Vikas Gupta, WILEY Dreamtech
3. Introduction to Information Technology, ITL Education Solutions limited, Pearson Education.
4. PC Hardware and A+ Handbook – Kate J. Chase PHI (Microsoft)
5. LaTeX Companion – Leslie Lamport, PHI/Pearson.
6. All LaTeX and others related material is available at
   (a) www.sssolutions.in
   (b) www.sontisoftsolutions.org
Unit-I

Introduction to Parallel Processing:
Trends towards Parallel Processing; Parallelism in Uniprocessors Systems; Parallel Processing Mechanisms, Balancing of subsystem bandwidth; Parallel Computer Structures: Pipeline Computers, Array Processors, Multiprocessor systems; Architectural Classification Schemes: Multiplicity of Instruction Data Streams, Serial Vs Parallel Processing.

Unit-II

Principles of Pipelining and Vector Processing:
Pipelining: Principles of linear pipelining, Classification of pipeline processors; Principles of designing pipelined processors; Vector Processing requirements.

Unit-III

Structures and Algorithms for Array Processors:
SIMD array processors: SIMD Computer Organization, masking and data routing mechanism, Inter-PE Communication; SIMD interconnection networks; Associative array processing: Associative memory organization, Associative Search Algorithms.

Unit-IV

Multiprocessors Architecture and Programming:
Functional structures: Loosely Coupled Multiprocessors, Tightly Coupled Multiprocessors; Interconnection networks; Parallel memory organization: Interleaved Memory Configurations.

Unit-V

Data Flow Computers:
Data driven computing and languages, Data flow computer Architecture.

Text Books:

Reference Books
UNIT-I


UNIT-II

Basic Behavioral Modeling: Interactions, Use cases, Use case Diagrams, Interaction diagrams, Activity Diagrams

UNIT-III

Basic Structural Modeling: Classes, Relationships, Common Mechanisms, Diagrams., Class diagrams

UNIT-IV

Advanced Behavioral Modeling: Events and signals, State machines, Processes and Threads, Time and space, State chart diagrams.
Advanced Structural Modeling Advanced classes, Advanced Relationships, Interfaces,Types and Roles, Packages,Instances

UNIT-V

Architectural Modeling: Component, Deployment, Component diagrams and Deployment diagrams.
Case Study: The Unified Library application.

Text Books:

2. UML 2 ToolkitHans-Erik Eriksson, Magnus Penker, Brian Lyons, David Fado, WILEY-Dreamtech India Pvt. Ltd.

Reference Books:

4. Practical Object-Oriented Design with UML Mark Priestley:,TATA McGraw Hill.
UNIT-I

**Introduction to DBMS:** Overview, File system vs DBMS, Advantages of DBMS, Storage data, queries, Transaction Management, DBMS structure

**E-R model:** Entities, Attributes and Entity sets, Relationship and Relationship sets, Features of ER model, Conceptual database design with ER model

UNIT-II

**Relational model:** Integrity constraints over relations and enforcement, Querying relation data, Logical database design, views, destroying/altering tables and views

**Relational algebra and calculus**

UNIT-III

**SQL:** Basic SQL, Query, union, interest, except, Nested Queries, Aggregated Operation, Null values, Embedded SQL, cursors, ODBC and JDBC, Triggers and Active database, designing active databases

UNIT-IV

**Schema refinement and normal forms:** Schema refinement, fds, fds reasoning normal forms, decomposition, normalization.

UNIT-V

**Transaction management, concurrency control & crash recovery**
Transaction concept, transactions and schedules, concurrent execution of transactions, lock – based concurrency control, crash recovery.
Concurrency control - lock management, specialized locking techniques, concurrency control without locking.
Crash Recovery- Aries, recovering from a system crash, media recovery

Text Books:


Reference Books:

1. Fundamentals of Database Systems, by Ramez Elmasri, Shamkant B. Navathe
2. Fundamentals of Database Systems, Elmasri, Navathe, Somayajulu, Gupta, Pearson Education,
UNIT I:

**Finite Automata and Regular Expressions:**
Basic Concepts of Finite State Systems, Deterministic and Non-Deterministic Finite Automata, Finite Automata with ε-moves, Regular Expressions, Mealy and Moore Machines.

UNIT II:

**Regular Sets & Regular Grammars:**
Basic Definitions of Formal Languages and Grammars, Regular Sets and Regular Grammars, Closure Properties of Regular Sets, Pumping Lemma for Regular Sets, Decision Algorithm for Regular Sets, Myhill-Nerode Theorem, Minimization of Finite Automata, Chomsky hierarchy, Definition of unrestricted grammars.

UNIT III:

**Context Free Grammars and Languages:**
Context Free Grammars and Languages, Derivation Trees, Simplification of Context Free Grammars, Normal Forms, Pumping Lemma for CFL, closure properties of CFL’s, Membership Algorithm (CYK), Decision Algorithm for CFL, CFL relationship between class of languages.

UNIT IV:

**Push down Automata and Deterministic CFL:** Informal Description, Definitions, Push-Down Automata and Context free Languages, equivalence of CFL and PDFs, LR(k) Grammars, Properties of LR (k) Grammars.

UNIT V:

**Turing Machines and Undecidability:** Design and Techniques for Construction of Turing Machines, Rice's Theorem, Modifications of Turing Machines, Techniques of Turing machines, Universal Turing Machines (UTM), Undecidability Problems, Post Correspondence Problem (PCP), Undecidability of PCP, modified Post Correspondence Problem (MPCP).

Text Books:

1. Introduction to Automata Theory, Languages & Computation By J.E Hopcraft & Jeffery D.Ulman – Pearson Education 3/e. 2007
2. Introduction to languages & and theory of computation (sie) by John C martin, Narosa Publications. Edition-3e

Reference Books:

2. An Introduction to Automata Theory & Formal Languages. --- Adesh K Pandey
Unit-I

Unit-II
MAC Sub layer - Channel Allocation Problems, Multiple Access Protocols - ALOHA, CSMA, Collision-free protocols, Ethernet - IEEE 802.x Standards, Wireless LANS - 802.11 standards, Bluetooth- standards, Data link layer switching – working of a Bridge & its types

Unit-III

Unit-IV
Transport Layer - Transport Services, Elements of Transport Protocols, The Internet Transport Protocols – UDP & TCP.

Unit-V

Text Book:

Reference Books:
1. Write a program to
   a. Print the IP address of a www.yahoo.com
   b. Print the url of 205.163.22.104
   c. Print all the addresses of www.apple.com
   d. Print the IP address of the local machine
   e. Print the hostname of the local machine

2. Write a program to Identify the well known ports on a Remote System
   By trying to listen to the various well known ports by opening client connections. If the exception does not
   occur then the remote port is active else the remote port is inactive.

3. Given a URL, write a program to print the parts of URL.

4. Write a program to display the socket’s port and IP address.

5. Write a program to send & Receive data from DatagramPacket

6. Write a program for Multicast Sniffer

7. Write a program for Multicast sender

8. Write a program for a Chat Application
   ▪ One-One: By opening socket connection and displaying what is written by one party to the other.
   ▪ Many-Many (Broadcast): Each client opens a socket connection to the chat server and writes to the socket.
     Whatever is written by one party can be seen by all other parties.

9. Write a program for the Data Retrieval from a Remote Database
   At the remote database a server listens for client connections. This server accepts SQL queries from the client,
   executes it on the database and sends the response to the client.

10. Write a program for the Mail Client
    ▪ **POP Client**: Gives the server name, user name and password retrieve the mails and allow manipulation of
        mail box using POP commands.
    ▪ **SMTP Client**: Gives the server name, send e-mail to the recipient using SMTP commands - (Core Java 2
        pg:163.)

11. Write a program for the Simulation of Telnet
    Provide a user interface to contact well-known ports, so that client-server interaction can be seen by the user.

12. Write a program for the Simple file transfer between two systems
    By opening socket connection to our server on one system and sending a file from one system to another.

13. Write a program for the TFTP-Client
    To develop a TFTP client for file transfer. (Unix Network programming - Stevens)

14. Write a program for the HTTP-Server
    Develop a HTTP server to implement the following commands GET, POST, HEAD, DELETE. The server must
    handle multiple clients.

Reference Books:

1. Java Network Programming, Harold Orielly
2. An Introduction to Computer Networking, Kenneth C. Mansfield Jr and James
   Antonakos Pearson Education Asia

Web Resource:

1. Design ER Model for a given application
2. Convert ER model to Relational Model
3. Creating and Altering tables for various relations in SQL
4. Implement Integrity Constraints. (Key constraints, Domain constraints)
5. Implementing queries in SQL using
   5.1 Insertion
   5.2 Retrieval (operations like union, intersect, minus, in, exists, group by and having etc.)
   5.3 Updation
   5.4 Deletion
6. Built in functions in oracle (String, Date, Aggregate functions etc.)
7. Working with views
8. Implementing joins, sub queries, nested and co related nested queries
9. Creating triggers and exception handling
10. Implementing cursors
11. Implementing operations on relations using PL/SQL
12. Implementing functions and stored procedures
13. Implementing the concepts of Rollback, commit and checkpoints
14. Database connectivity using JDBC & ODBC

Perform physical design based above logical design using Oracle/MSSQL on windows platform or MYSQL/PostgreSQL on Linux platform

Perform DML and DLL using PL/SQL or PL/pgSQL for the above problems.

Reference Books
2. Oracle books, Oracle press.
UNIT – I:

UNIT - II
Lexical Analysis: The role of the Lexical analyzer, Regular Grammar and Regular expression for common programming language features, Input Buffering, Recognition of Tokens, Automatic Lexical Analyzer generator (LEX/FLEX).
Syntax Analysis (Part-I): Context Free Grammars
Top-Down parsing techniques: Recursive Descent Parsing, First and Follow, LL(1) grammars, Non-recursive Predictive Parsing, Error Recovery in Predictive Parsing

UNIT – III
Syntax Analysis (Part-II): Bottom-Up parsing techniques: Reductions, Handle Pruning, Shift Reduce Parsing, Simple LR Parser, Canonical LR and LALR Parsing Techniques, Ambiguous grammars, Parser Generator (YACC).

UNIT - IV
Syntax Directed Translation: Syntax Directed Definition - Inherited and Synthesized Attributes, Evaluation Orders for SDD’s – Dependency Graphs, S-attributed & L-attributed
Definition and Syntax Directed Translation Schemes.
Run-Time Environments: Storage Organization, Stack allocation of Space

UNIT - V
Code Generation: Issues in the design of a code Generator, Basic blocks and Flow Graphs, Dag Representation of Basic Blocks, A Simple Code Generator, Register allocation and Assignment, Peephole Optimization.
Machine Independent Optimization: The Principal Sources of Optimization, Data-Flow Analysis – Introduction, constant propagation, Redundancy Elimination, Loops in Flow Graphs

Text Books:

Reference Books:
1. Principles of compiler design- A.V.Aho, J.D.Ullman; Pearson Education
2. Lex & yacc - John R. Levine, Tony Mason, Doug Brown, O’reilly
5. Compiler Design In C- Allen I. Holub.
UNIT I


UNIT II


UNIT III

Dynamic Programming: The general method -- Multistage graphs -- all pairs shortest paths -- optimal binary search trees -- reliability design -- the traveling sales person problem.

Unit IV


Unit V


Text Books:


Reference Books:

2. Algorithm Design, Foundations, Analysis, and Internet Examples by Michel T. Goodrich & Roberto Tamassia, John Weily and Sons
5. Algorithm Design, by Jon Kleinberg, Eva Tardos, Pearson
Unit-I


Unit-II

**Basic Concepts**
Demand Analysis, Law of Demand, Determinates of Demand, Elasticity of Demand-Price, Income and cross Elasticity. Uses of concept of elasticity of demand in managerial decision.

Unit-III

**Demand forecasting**

Unit-IV

**Market Structure**
Perfect Competition, Imperfect competition – Monopolistic, Oligopoly, duopoly sorbent features of price determination and various market conditions.

Unit-V

**National Income, Inflation and Business Cycles**
Concept of N.I. and Measurement. Meaning of Inflation, Type causes & prevention methods, Phases of business cycle.

Text Books:
1. Modern Microeconomics Koutsoyiannis A :, ELBS.
2. Managerial Economics for Engineering : Prof. D.N. Kakkar
3. Managerial Economics : D.N. Dwivedi

Reference Books:
B.Tech. (CSE) Sixth Semester  
WEB TECHNOLOGIES 

Code: EURCS 604/ EURIT 604  
Category: CE 
Credits: 3  
Hours: 3 per week  
Department: CSE

UNIT-I: 
Introduction to Web Technology: Internet, WWW, Web Browsers with suitable examples, Web Servers with suitable examples, URL, HTTP, MIME.
Cascade Style Sheets: Levels Of Style Sheets, Specification Formats, Style Classes, Properties, Colors, Span and Div tags.

UNIT-II
Introduction to Java Script: Overview of Java Script, Syntactic characteristics, Primitives, Operator and Expression, control statements, Arrays, functions, errors in scripts, Document Object Model(DOM), Event driven computation, Element access in Java script, The navigator Object.

UNIT-III

UNIT-IV:
Networking and Servlets:
Introduction to networking using JAVA API, TCP/IP Sockets and Datagram Sockets.

UNIT-V
Introduction to PHP:
Overview of PHP, general server characteristics, Creating PHP Pages, Form handling, Database access with PHP & MySql.

Text Books:
3. Web Technologies, Oxford Higher Education publication by UTTAM K ROY.

Reference Books:
1. Core SERVLETS AND JAVA SERVER PAGES VOLUME 1: CORE TECHNOLOGIES By Marty Hall and Larry Brown Pearson
2. Internet and World Wide Web – How to program by Dietel and Nieto PHI/Pearson Education Asia.
4. Murach’s beginning JAVA JDK 5, Murach, SPD
5. An Introduction to web Design and Programming –Wang-Thomson
7. Web Warrior Guide to Web Programming-Bai/Ekedaw-Thomas
8. Beginning Web Programming-Jon Duckett WROX.
10. www.w3schools.com
UNIT-I
Introduction to computer graphics- Introduction, Non interactive/interactive Graphics, Uses of computer graphics, classification of Applications, Programming Language, Graphics system configuration
Graphic Systems-Introduction, Cathode Ray Tube(CRT) basics, Refresh Display, Raster Display, Computer Graphic Software, Integration of Graphics Standard

UNIT-II
Output Primitives- Introduction, Representing Image, Straight Line, Line drawing algorithms, Differential Digital Analyser(DDA) algorithm, Bresenham’s Line Algorithm, Circle generating Algorithm, Bresenham’s circle Algorithm, Midpoint circle Algorithm, Polygon filling Algorithms, Character or Text Generation, Aliasing and Antialiasing

UNIT-III
Two Dimensional Transformations- Introduction, Representation of points, Matrix Algebra and Transformation, Transformation of points, Transformation of straight line, Midpoint Transformation, Transformation of Parallel Lines, Transformation of Intersecting Lines, Rotation Window Clipping- Introduction, Viewing Transformation, Clipping, Point Clipping, Line Clipping, Cohen-Sutherland Line clipping, Polygon Clipping, Sutherland-Hodgman Algorithm, Curve Clipping

UNIT-IV
3D Concepts and Techniques- Introduction, 3D Transformations, Rotation about an axis Parallel to a Coordinate Axis, Rotation about an Arbitrary Axis in Space, Reflection through an Arbitrary Plane, 3D Modeling Schemes, Projection, Orthographic Projection, Isometric Projection, Oblique Projection, Perspective projection, Curves-Introduction, Parametric cubic polynomial curves, Solution of cubic polynomial curves, Bezier curves, Spline representation, Parametric and geometric continuity condition, Spline as piecewise polynomials, Spline as blending function, Closed curves based Spline, Changing knot spacing, Basis function for Spline curves, B-Spline basis functions, B-Spline with multiple knots

UNIT-V
Introduction To Multimedia:-Pc specification, visual elements, wav and mp3 format, sound elements, multimedia storage, flash animation.

TextBooks:

Reference Books:
1. Multimedia and communications technology, Steve Heath, Elsevier
UNIT-I

**Introduction:** Well-Posed Learning Problems, Designing a Learning System, Issues in Machine Learning, A Concept Learning Task, Concept Learning as Search, FIND-S: Finding a Maximally Specific Hypothesis, A Biased Hypothesis Space, Inductive Bias

UNIT-II

**Decision Tree Learning:** Decision Tree Representation, Appropriate Problems for Decision Tree Learning, Hypothesis Space Search in Decision Tree Learning, Inductive Bias in Decision Tree Learning, Issues in Decision Tree Learning, Bayesian Learning – Bayes Theorem

UNIT-III

**Knowledge Representation:** Representing Simple Facts in Logic, Representing Instance and IsA Relationships, Computable Functions and Predicates, Resolution, Procedural versus Declarative Knowledge, Logic Programming, Forward vs Backward Reasoning

UNIT-IV

**Artificial Neural Networks:** Neurons and Biological Motivation, Neural Network Representations, Problems for Neural Network Learning, Perceptrons, Multilayer Networks and the Back Propagation Algorithm

UNIT-V

**Genetic Algorithms:** Representing Hypothesis, Genetic Operators, Fitness Function and Selection, An Illustrative Example, Hypothesis Space Search, Genetic Programming

**TextBooks:**

1. Machine Learning – Tom Mitchel

**Reference Books:**

1. Artificial Intelligence Structures and Strategies complex problem Solving – George F. Lugar, Pearson Education
1. Implement transition diagrams for identifying an identifier and constant and classify the identifier as either variable or array or function or structure and constant as integer or real.

2. Consider the following circuit language that used to describe the circuits (parallel, sequential or both). The syntax of the language is defined by following grammar:

```
<circuit> ---> seq<block> | par<block> | <value>
[block] ---> <circuit><block> | end
[value] ---> <digit><value> | <digit>
<digit> ----> 0|1|2|3|4|5|6|7|8|9
```

A simple program written in this language is:
```
par66 seq par 3672 9 end
```

(36, 72 connected in parallel intern connected with 9 in sequential intern connected with 66 in parallel.)

   a) Design a Lexical analyser for the above language. The lexical analyser should ignore redundant spaces, tabs and newlines. Although the syntax specification states that value can be arbitrarily long, you may restrict the length to some reasonable value.

   b) Implement the lexical analyser using JLex, flex or lex or other lexical analyser generating tools.

   c) Implement syntax analyser for the circuit language by using RecursiveDescent parser which takes output of the lexical analyser and checks whether it follows the syntax or not. (Hint: assume that lexical analyser returns val token for integer constant then grammar is:

```
C --> seqB|parB|val
B --> CB|end
```

and checking for this words in implementation of recursive descent parsing is like next==s and next+1==e and next+2==q for seq)

   d) Write Yacc code to get final circuit value for the above simple program output should be 22.

   (Hint: 36, 72 in parallel value is 24. 24, 9 in sequential value is 33. 33, 66 in parallel value is 22. Final result is 22.)

3. Write a program to read CFG productions and store into corresponding data structures.

4. Write a program for eliminating Left-Recursion from the given grammar.

5. Write a program for applying left factoring to a given grammar.

6. Implement algorithms for finding First and Follow symbols of a given grammar.

7. Consider the following Expression language that used to describe the Arithmetic expressions in Calculator The syntax of the language is defined by following grammar:

```
<Line> --> <exp>
<exp> ---> <exp>+<exp>| <exp>-<exp>|<exp>*<exp>|<exp>/<exp>
<exp> --> <value>
[value] ---> <digit><value> | <digit>
<digit> ----> 0|1|2|3|4|5|6|7|8|9
```

A simple program written in this language is:
```
2+45*34/17-67+78/6
```
a) Design a Lexical analyser for the above language. The lexical analyser should ignore redundant spaces, tabs and newlines. Although the syntax specification states that value can be arbitrarily long, you may restrict the length to some reasonable value.

b) Implement the lexical analyser using JLex, flex or lex or other lexical analyser generating tools.

c) Implement syntax analyser for the Expression language by using RecursiveDescent parser which takes output of the lexical analyser and checks whether it follows the syntax or not. (Hint: assume that lexical analyser returns val token for integer constant then grammar is E→→E+E|E-E|E*E|E/E|val and checking for this words in implementation of recursive descent parsing is like next==v and next+1==a and next+2==l for val)

d) Implement Operator Precedence parser for the above language. Which takes operator precedence matrix and the string as the input and check whether the string is accepted or not. (Hint: take the grammar given in question c.)

e) Write Yacc code to get final Expression value, for the above simple program output should be 38.

f) Write Yacc code to get three address code for the given expression.

8. Consider the following grammar which is used to describe the X language which might be used in next generation programmable calculators. It supports integer, real and complex numbers. This language uses something called Hungarian notation the name of the variable itself tells you about the type of the data it contains if the starting letter is ‘i’ then integer, ‘r’ then real, ‘c’ then complex number

```
<program> → begin<stmts>end
<stmts> ---><statement>;<stmts> | <statement>
<statement> ---><identifier>=<expr> | <conditional>
<expr> ---><expr> + <term> |<expr>-<term>|<term>*<fact>|<fact>
<fact> ---><identifier>|<conditional>--->|if <expr>thenbegin<stmts>end<cexpr> ---><identifier>=<identifier>
<identifier> --->i<letters>|r<letters>|c<letters>
<letters> ---><letter><letters>|<letter>
<letter> --->a|b|...|z|A|B|...|Z
```

a) Design a Lexical analyser for the above language. The lexical analyser should ignore redundant spaces, tabs and newlines. Although the syntax specification states that value can be arbitrarily long, you may restrict the length to some reasonable value.

b) Implement the lexical analyser using JLex, flex or lex or other lexical analyser generating tools.

c) Implement Predictive parser for the above language.

d) Implement LALR bottom up parser for the above language.

e) Convert the CFG rules into Yacc form and write code to generate abstract syntax tree or three address code.

f) Write program to generate 8086 assembly code from the abstract syntax tree or three address code generated by the parser. The target assembly instructions can be simple move, add, sub, and jump. Also simple addressing modes are used.
Experiment-1:

Design the static web pages required for any online services web site.

1) HOME PAGE:
The static home page must contain three frames.

   Top frame   : Logo and the college name and links to Home page, Login page, Registration page, Catalogue Page, Cart Page etc.
   Left frame   : At least four links for navigation, which will display the catalogue of respective links.
   Right frame: The pages to the links in the left frame must be loaded here. Initially this page contains description of the web site.

2) LOGIN PAGE:
   This page has to contain Login Form, Forgot Password, and Link to new user Registration Form, back to Home page etc. If the user is authenticated user, can access the web site. Otherwise he has to register.

3). Registration page:
   This page has to contain User Registration form minimum of 10 Fields (use all the form Widgets) If the user is authenticated user, can access the web site.

4) CATOLOGUE PAGE:
The catalogue page should contain the details of all the items available in the web site in a table.

5) Cart page:
   Selected list of items has to display in table format & compute cost before submitting. (Use Event Handler functions)

Experiment-2:
Design a web page using CSS (Cascading Style Sheets) which includes the following:

   1) Use different font, styles: In the style definition you define how each selector should work (font, color etc.). Then, in the body of your pages, you refer to these selectors to activate the styles.

   2) Set a background image for both the page and single elements on the page. You can define the background image for the page like this:

   3) Define styles for links as

   4) Work with layers such as Span& Div Tags.

Experiment-3:

VALIDATION:
Write JavaScript to validate the following fields of the above registration page.

   2. Name (Name should contains alphabets and the length should not be less than 6 characters).
   3. Password (Password should not be less than 6 characters length).
   4. E-mail id (should not contain any invalid and must follow the standard pattern name@domain.com)
   4. Phone number (Phone number should contain 10 digits only).

Note: You can also validate the login page with these parameters.
Experiment -4:

Write an XML file which will display the item (your wish) information which includes the following (for example)

1) Title of the book
2) Author Name
3) ISBN number
4) Publisher name
5) Edition
6) Price

Write a Document Type Definition (DTD) to validate the above XML file.

Display the XML file as follows.

The contents should be displayed in a table. The header of the table should be in color GREY. And the Author names column should be displayed in one color and should be capitalized and in bold. Use your own colors for remaining columns.

Use XML schemas XSL and CSS for the above purpose.

Note: Give at least for 4 books. It should be valid syntactically.

Hint: You can use some xml editors like XML-spy

Experiment -5:

Install TOMCAT web server and APACHE.

While installation assign port number 4040 to TOMCAT and 8080 to APACHE. Make sure that these ports are available i.e., no other process is using this port.

1) Access the above developed static web pages for books web site, using these servers by putting the web pages developed in week-1 and week-2 in the document root.

Access the pages by using the urls: http://localhost:4040/rama/books.html (for tomcat)
http://localhost:8080/books.html (for Apache)

Experiment -6:

User Authentication:

Assume four users user1, user2, user3 and user4 having the passwords pwd1, pwd2, pwd3 and pwd4 respectively. Write a servlet for doing the following.

1. Create a Cookie and add these four user id’s and passwords to this Cookie.
2. Read the user id and passwords entered in the Login form and authenticate with the values (user id and passwords) available in the cookies.

If he is a valid user (i.e., user-name and password match) you should welcome him by name(user-name) else you should display “You are not an authenticated user.”

Use init-parameters to do this. Store the user-names and passwords in the webinf.xml and access them in the servlet by using the getInitParameters() method.

Experiment -7:

Install a database(Oracle).

Create a table which should contain at least the following fields: name, password, email-id, phone number (these should hold the data from the registration form).

Practice ‘JDBC’ connectivity.

Write a java program/servlet/JSP to connect to that database and extract data from the tables and display them.

Experiment with various SQL queries.

Insert the details of the users who register with the web site, whenever a new user clicks the submit button in the registration page

Experiment -8:

Write a JSP which does the following job:

Insert the details of the 3 or 4 users who register with the web site by using registration form. Authenticate the user when he submits the login form using the user name and password from the database.

Experiment -9:

Install a database(Mysql).

Create a table which should contain at least the following fields: name, password, email-id, phone number (these should hold the data from the registration form).

Write a PHP to connect to that database and extract data from the tables and display them. Experiment with various MySQL queries.

Insert the details of the users who register with the web site, whenever a new user clicks the submit button in the registration page.
UNIT-I


**The 8051 Architecture:** Introduction, 8051 Microcontroller Hardware, Input/Output Ports and Circuits, External Memory, Counter and Timers, Serial data Input/Output, Interrupts. (Chapter 3 from Text Book 2, Ayala).

UNIT-II

**Basic Assembly Language Programming Concepts:** The Assembly Language Programming Process, Programming Tools and Techniques, Programming the 8051. Data Transfer and Logical Instructions. (Chapters 4, 5 and 6 from Text Book 2, Ayala)

Arithmetic Operations, Decimal Arithmetic, Jump and Call Instructions, Further Details on Interrupts. (Chapter 7 and 8 from Text Book 2, Ayala)

UNIT-III

**Applications:** Interfacing with Keyboards, Displays, D/A and A/D Conversions, Multiple Interrupts, Serial Data Communication. (Chapter 10 and 11 from Text Book 2, Ayala)

**Introduction to Real-Time Operating Systems:** Tasks and Task States, Tasks and Data, Semaphores, and Shared Data; Message Queues, Mailboxes and Pipes, Timer Functions, Events, Memory Management, Interrupt Routines in an RTOS Environment. (Chapter 6 and 7 from Text Book 3, Simon)

UNIT-IV

**Basic Design Using a Real-Time Operating System:** Principles, Semaphores and Queues, Hard Real-Time Scheduling Considerations, Saving Memory and Power, An example RTOS like uC-OS (Open Source);

**Embedded Software Development Tools:** Host and Target machines, Linker/Locators for Embedded Software, Getting Embedded Software into the Target System;

**Debugging Techniques:** Testing on Host Machine, Using Laboratory Tools, An Example System. (Chapter 8, 9, 10 & 11 from Text Book 3, Simon).

UNIT-V

**Introduction to advanced architectures:** ARM and SHARC, Processor and memory organization and Instruction level parallelism; Networked embedded systems: Bus protocols, I2C bus and CAN bus; Internet-Enabled Systems, Design Example-Elevator Controller. (Chapter 8 from Text Book 1, Wolf)

Text Books:

1. Computers as Components-principles of Embedded computer system design, Wayne Wolf, Elseveier.

Reference Books:

1. Embedding system building blocks, Labrosse, via CMP publishers.
2. Embedded Systems, Raj Kamal, TMH.
3. Micro Controllers, Ajay V Deshmukhi, TMH.
5. Microcontrollers, Raj kamal, Pearson Education.
6. An Embedded Software Primer, David E. Simon, Pearson Education.
UNIT-I
Introduction to Data Mining: What is Data Mining, Motivating Challenges, The origins of Data Mining.
Data Mining Tasks
Data: Types of Data, Data quality, Data Preprocessing, Measures of Similarity and Dissimilarity

UNIT-II
Data Warehouse and OLAP Technology for Data Mining:
What is a Data Warehouse? Multi-Dimensional Data Model, Data Warehouse Architecture, Data Warehouse Implementation, Development of Data Cube Technology, Data Warehousing to Data Mining.

UNIT-III
Classification: Basic Concepts, Decision Trees, and Model Evaluation
Preliminaries, General Approach to solving a classification Problem, Decision Tree, Induction, Model Overfitting, Evaluating the performance of a classifier, Rule-based Classifier, Nearest-Neighbor Classifiers, Bayesian Classifiers, Support vector Machines

UNIT-IV
Association Analysis: Basic Concepts and Algorithms, Frequent Itemset Generation, Compact Representation of Frequent Itemsets, Alternative Methods for generating Frequent Itemsets, Evaluation of Association Patterns

UNIT-V

Text Books:
1. Data Mining by Tan, Steinbach, Vipin Kumar, Pearson Education.
2. Data Mining Concepts and Techniques Jiawei Han and Micheline Kamber Morgan Kaufman Publications.

Reference Books:
1. Data Mining: Introductory and Advanced Topics, Margaret H Dunham, Pearson Education.
2. Data Mining, Ian H. Witten Eibe Frank, Morgan Kaufman Publications.
UNIT - I
(Wireless) Medium Access Control: Motivation for a specialized MAC (Hidden and exposed terminals, Near and far terminals), SDMA, FDMA, TDMA, CDMA

UNIT - II
GSM: Mobile services, System architecture, Radio interface, Protocols, Localization and calling, Handover, Security, and New data services.

UNIT - III
Mobile Network Layer: Mobile IP (Goals, assumptions, entities and terminology, IP packet delivery, agent advertisement and discovery, registration, tunneling and encapsulation, optimizations), Dynamic Host Configuration Protocol (DHCP).

UNIT - IV
Mobile Transport Layer: Traditional TCP, Indirect TCP, Snooping TCP, Mobile TCP, Fast retransmit/fast recovery, Transmission/time-out freezing, Selective retransmission, Transaction oriented TCP.

UNIT – V
Wireless application Protocols: Architecture, wireless data gram protocol, wireless transport layer protocol, wireless transaction layer protocol, wireless session layer protocol, wireless application environment.

Text Book:


Reference Books :

B.Tech. (CSE) Seventh Semester
CRYPTOGRAPHY AND NETWORK SECURITY

Code: EURCS 721
Category: CE
Credits: 4
Hours: 4 per week
Department: CSE

Unit-I

Unit-II

Unit-III

Unit-IV

Unit-V

Text Book:

Reference Books:
1. Introduction to cryptography, Johannes A. Buchmann, Springer - Verlag.
2. Cryptography and Network Security, Atul Kahate, TMH
UNIT-I:

Digital Image Fundamentals
Digital Image Definitions and Concepts, Images as Surfaces, Multi-channel Images and Color, Matlab for Image Processing, The image model and image acquisition image shape, sampling, intensify images, color images, range images, image capture, scanners, and satellite imagery.

UNIT-II:

Basic (Low-Level) Digital Image Processing

UNIT-III:

Advanced (Mid-Level) Digital Image Processing

UNIT-IV:

Advanced (High-Level) Digital Image Processing
Basic Image Segmentation Strategies, Data Structures for Segmentation, Watersheds and Region-Based Algorithms

UNIT-V:

Pattern Recognition

Text Books:


Reference Books:

1. Pattern Recognition and Image Analysis – Earl Gose, Richard John baugh, Steve Jost PHI 2004
2. Fundamentals of speech Recognition, Lawerence Rabiner, Biing – Hwang
   Juang Pearson education
B.Tech. (CSE) Seventh Semester

SOFT COMPUTING

Code: EURCS 723
Category: CE
Credits: 4
Department: CSE
Hours: 4 per week

UNIT- I
Introduction to Soft Computing, Artificial Neural Network (ANN): Fundamentals of ANN, Basic Models of an artificial Neuron, Neural Network Architecture, Learning methods, Terminologies of ANN, Hebb network,

UNIT- II

UNIT-III
FUZZY LOGIC: Fuzzy set theory: crisp sets, fuzzy sets, crisp relations, fuzzy relations, Fuzzy Systems: Crisp logic predicate logic, fuzzy logic, fuzzy Rule based system, Defuzzification Methods, Fuzzy rule based reasoning

UNIT-IV

UNIT-V

Text Book :

Reference Book :
2. Neural Networks, Fuzzy Logic and Genetic Algorithm (synthesis and Application)/S. Rajasekaran, G. A. Vijayalakshmi Pai, PHI
UNIT I
Introduction to distributed systems, what is distributed systems? Hardware concepts, software concepts, design issues.

Communication in distributed systems: Lay red protocols, ATM networks, The client-server model, remote procedure call, group communication.

UNIT II
Synchronization in distributed systems, clock synchronization, mutual exclusion, election algorithms, atomic transaction, deadlocks in distributed systems.

UNIT III
Process and processors in distributed systems: Threads, system models, processors allocation, scheduling in distributed systems, fault tolerance, real-time distributed system.

UNIT IV
Distributed file systems, distributed file system design, distributed file system implementation, trends in distributed file system.

UNIT V
Distributed shared memory, introduction, what is shared memory, consistency models, page-based distributed shared memory, shared-variable distributed shared memory, object-based distributed shared memory.

Text Book:
1. Distributed Operating Systems - Andrew S. Tanenbaum, PHI.

Reference Books:
1. Distributed Systems, Principles and paradigms, 2/E Andrew S. Tanenbaum and Maarten Van Steen, Prentice Hall
B.Tech. (CSE) Seventh Semester
DESIGN PATTERNS

Code: EURCS 725
Category: DE
Credits: 4
Hours: 4 per week
Department: CSE

UNIT I:

INTRODUCTION
History and Origin Of Patterns- Design Patterns in MVC- Describing Design Patterns - How Design Patterns Solve Design Problems - Selecting a Design Pattern – Using a Design Pattern

UNIT II:

DESIGN PATTERNS-1
Creational -Abstract Factory-BUILDER-Factory Method-Prototype-Singleton

UNIT III:

DESIGN PATTERNS-2
Structural Patterns: Adapter-Bridge-Composite -Facade -Flyweight -Proxy

UNIT IV:

DESIGN PATTERNS-3

UNIT V:

ADVANCED PATTERNS
Pattern Catalogs and Writing Patterns, Patterns and Case Study: Designing a Document Editor Anti-Patterns - Case Studies In UML and CORBA, Pattern Community.

Text Books:


Reference Books:

UNIT-I
Errors, global method, Local method, Edge matching, Non-topological editing, Transferring map features from one map to another.
Vector Data Analysis: Buffering and applications, Map overlay methods, Slivers, Error propagation in map Overlay, Distance measurement, Map manipulation.

UNIT-II
Vector Data Model: Vector data representation, topological data structure, Non-topological vector data, Higher-Level objects.
Data Input, Existing GIS data, Creating new data, Remotely sensed data, GPS data, Digitizing using a digitizing table, Scanning, on-screen digitizing, Geometric Transformation, Root Mean Square Error.
Spatial Data Editing: Types of digitizing errors, Location errors, Topological errors, topological editing, Correction of digitizing emetic tinting, Perspective view, Terrain analysis, Slope and aspect, Surface curvature, View shed analysis, Grid versus TIN.

UNIT-III
Raster Data: Elements and types of the raster data model, GIS software-specific raster data, Raster data structure, Projection and geometric transformation of raster data, Data conversion, Integration of raster and vector data.
Raster Data Analysis: Local, Neighborhood, Zonal operations and their applications, Physical distance and cost distance measure operations and their applications, Spatial autocorrelation.
Map Projection: shape of the earth, Datum, Coordinate Systems, Basic Assumptions, Properties of map projections, Projection Types.
Non-Spatial Data: Hierarchical structure, Network structure, Relational structure, Attribute data in GIS, Linking attribute Data and Spatial Data. Attribute Data Entry.

UNIT-IV

UNIT-V
GIS Models & Modeling: Binary, Index, Regression, Processing models.
Network And Dynamic Segmentation: Network Elements in GIS, Links (Resistance, Resource Demand), Turns, Stops, Facility Points, Blocks, Nodes. Network Analysis, Path Determination (Source-Destination path, optimal cyclic path), Resource allocation or distribution analysis, Utility locating or siting analysis. Dynamic Segmentation, Event Tables, Applications of Dynamic Segmentation.

Text Book:

Reference Books:
B.Tech. (CSE) Seventh Semester
SYSTEMS MODELING AND SIMULATION

Code: EURCS 752
Category : IE*
Credits: 4
Hours : 4 per week

UNIT-I

System Models: Concept of a system, System Environment, Stochastic activities, continuous and Discrete Systems, System Modeling, Physical and Mathematical Models for Systems, Static and Dynamic Categorization of these physical and mathematical Models. Principles used in modeling.

System Simulation: Monte–Carlo Method: Comparison of Simulation and analytical methods, Experimental nature, Types of Simulation, Numerical Computation Technique for continuous model and for Discrete model, Distributed Lag Models, Cobweb Models.

UNIT-II


UNIT-III


Arrival Patterns And Service Times: Poisson’s Arrival patterns, Exponential Distribution, Erlang Distribution, Hyper-Exponential Distribution, Normal Distribution, Queuing Disciplines, Mathematical Solutions of Queuing Problems.

UNIT-IV

Introduction To GPSS: GPSS Programs, General Description Action Times, Succession of Events, Choice of Paths, Simulation of a manufacturing Shop, Conditional Transfers, Control Statements, Functions, Simulation of a Super Market, Transfer modes, GPSS Model of a Simple Telephone system.

UNIT-V

Random Access Systems:
Aloha, Slotted Aloha, Carrier Sense Multiple Access, Delay Calculations in CSMA/CD, Performance comparisons, Reservation Techniques.


Text Books:


Reference Books:

B.Tech. (CSE) Seventh Semester
BIO MEDICAL INSTRUMENTATION

Code: EURCS 753
Category : IE*
Credits: 4
Hours : 4 per week

UNIT I


UNIT II

**Physiological Transducers:** Pressure transducers, Transducers for body temperature measurement – Pulse sensors – Respiration sensors.

UNIT III

**Biomedical recorders:** Electrocardiograph-block diagram, ECG leads, effects of artifacts on ECG recordings; Phonocardiograph; Electroencephalograph – Electromyograph – preamplifier, filters, delay circuits, stimulators.

UNIT IV

**Biomedical telemetry:** Wireless telemetry – single channel telemetry systems – Temperature telemetry system – Multichannel wireless telemetry system – Multipatient telemetry – Implantable telemetry systems – Transmission of analog physiological signals over telephone lines.

UNIT V

**Patient safety:** Electric shock hazards – Leakage currents – Test instruments for checking safety parameters of biomedical equipments.

**Text Books:**


**Reference Book:**

B.Tech. (CSE) Seventh Semester
POWER ELECTRONICS

Code: EURCS 754  
Category: IE*  
Credits: 4  
Hours: 4 per week

UNIT I

Power Semiconductor Switches:

UNIT II

Phase Controlled Rectifiers:
Single phase and three phase – half wave – full wave – and Bridge controlled rectifiers – Dual converters – effect of load and source inductance – Natural communication.

UNIT III

Choppers:

UNIT IV

Inverters

UNIT V

AC to AC Converters:

Text Books:
1. Power Electronics, M. Rashid. PHI
3. Power Electronics, Singh M.D. and Khanchandani, TMH

Reference Books:
1. An introduction to Thyristors and their applications’, M.Rama Murthy; East-West press.
2. Power Electronics, R.Ramshaw.
3. Thyristorised Power Controllers, Dubey., Wiley Eastern Ltd.
B.Tech. (CSE) Seventh Semester
PROJECT PLANNING & MANAGEMENT

Code: EURCS 755
Category: IE*
Credits: 4
Hours : 4 per week

UNIT-I

Introduction to Project Management:
Introduction, Gantt Charts, Weaknesses in Gantt Charts, Milestone Charts, Work Break Down Structure.

UNIT-II

Project Scheduling:

UNIT-III

Project Evaluation:
Multi Time Estimates, Frequency Distribution, Mean, Variance, Standard Deviation, Probability Distribution, the Beta Distribution, Expected Time or Average Time, Probability of Achieving Completion Date, Central Limit Theorem and Application to a Network.

UNIT-IV

Project Cost Analysis:
Cost vs Time, Straight Line & Segmented Approximations, Optimum Duration, Contracting the Network.

UNIT-V


Text Book:

Reference Books:
B.Tech. (CSE) Seventh Semester

INTRODUCTION TO MICRO ELECTROMECHANICAL SYSTEMS (MEMS)

Code: EURCS 756
Category: IE*
Credits: 4
Hours: 4 per week

UNIT I


Micromachining: Subtractive Processes (Wet and Dry etching), Additive Processes (Evaporation, Sputtering, Epitaxial growth).

Fundamental Devices and Processes: Basic mechanics and electrostatics for MEMS, parallel plate actuators, pull-in point, comb drives. Electrostatic actuators; MEMS foundries, Cronos MUMPs (multi user MEMS process).

UNIT II

MUMPs (Multi User MEMS Process): JDS Uniphase MUMPs processing sequence and design rules. Design rules; applications; micro hinges and deployment actuators.

CMOS MEMS: CMOS foundry processes, integrated IC/MEMS, MEMS postprocessing, applications.

UNIT III


Izzoiresistivity; Scanning Probe Microscopy: scanning tunneling Microscope (STM), atomic force microscope (AFM)

UNIT IV

Wireless MEMS: mechanical and electrical resonators, Q-factor, switches, filters

Power for MEMS: thin film batteries, micro fuel cells, energy fields, MEMS Packaging and Assembly: microassembly: serial and parallel, deterministic and stochastic; microgrippers: HexSil process; packaging techniques

UNIT V

The future of MEMS: Biomems – neural implants, gene chips, diagnostic chips; MEMS in space; mechanical computers; invisible and ubiquitous computing

Text Books:


Reference Books:

1. MEMS & Microsystems, Tai-ran Hsu, TMGH 2002
2. Micro sensors, MEMS & Smart Devices, JW Gardner & VK Varadan John Wiley,
B.Tech. (CSE) Seventh Semester
ENTREPRENEURSHIP

Code: EURCS  757
Category: IE*
Credits: 4
Hours : 4 per week

UNIT I
Introduction:
Meaning, Importance, benefits of Entrepreneurship-characterizes, factors of Entrepreneurship-Barriers of Entrepreneurship-Difference between Entrepreneurship and management-Evolution of the concept of entrepreneur-Difference between entrepreneur and entrepreneur. Motivational aspects of entrepreneur (McClelland theory)

UNIT II
Project Identification And Selection:

UNIT III
Sources Of Finance:
Cost of capital-importance of a capital-Basic concepts, rational assumptions-cost of debt, reference, equity capital-source of finance-internal, external sources-institutional finance to entrepreneurs and institutional support to entrepreneurs.

UNIT IV
Project Appraisal:
Concept project appraisal-Methods of project appraisal, Economic analysis, Financial analysis, Market analysis Technical feasibility and Managerial competence (assessment of working and fixed capital Govt. Policies, qualitative methods of market analysis, Life cycle segmentation).

UNIT V
Ownership Structures & Evaluation of Edps:
Ownership structures-sole trader, partnership (Partnership deed) types of partnership-Joint stock companies-Difference between private and a public company – Advantage and disadvantages of the ownership structures – Distinction between MDP and EDP – Training methods and Role playing (Games).

Text Books:
5. Seven Business Crisis,Dr. Patel V.G., Tata McGraw Hill

Reference Books:
Unit-I
Basic Concepts of Public Administration
Origin-Indian Administration; Meaning-Administration; Public Administration; Administration and Management; Nature; Scope-The POSDCORB View of Public Administration The Subject-matter View of Public Administration; Philosophy of Administration; Approaches to the Study of Public Administration-Philosophical Approach, Legal Approach, Historical Approach, The Case Method Approach; Institutional and Structural Approach, Behavioural Approach; Human Factor in Administration; Public Administration in Developed and Developing Countries.

Public and Private Administration
Public Administration and Private Administration under Liberalisation; Woodrow Wilson’s Vision of Administration.

Importance of Public Administration in the Modern State
Information Technology and Public Administration; Concept of E-Governance-Indian Experience with E-Governance; Impact of IT on Public Administration; Public Administration under New Economic Policy, 1990; Future of Discipline of Public Administration.

Major Issues and Challenges of Public Administration in the Third World

Unit-II
Principles of Organization
Hierarchy-Features, Merits, Criticism; Span of Control; Unity of Command; Integration versus Disintegration; Centralization and Decentralization-Meaning, Advantages of Decentralization; Demerits, Advantages of Centralization, Demerits of Centralization, Evaluation; Co-ordination-Significance, Meaning, Types, How to Co-ordinate?; Hindrances to Co-ordination; Delegation-Need for Delegation, Meaning, elements, What to Delegate?, Hindrances to Delegation, How to Delegate?; Supervision-Why Supervision?, What is Supervision?, Who are Supervisors?, How to get Supervisors?, Training of Supervisors.

Theories of Organization

Unit-III
Bureaucracy & Civil Service

Civil Service in India
Introduction; All-India Services; Why All-India Services?; History of All-India Services; The Indian Administrative Services.

Recruitment & Selection
Importance; Problem of Recruitment-Kothari and Satish Chandra Committees on Recruitment Policy; Scheme of Competitive Examination, Union Public Service Commission, Staff Selection Commission; Reservation for Backward Classes, Scheduled Castes and Tribes-Communal Representation in Services, Anglo-Indians, Regional Representation and Linguistic Consideration.

Promotion and Performance Appraisal
Meaning and Importance; History of Promotion Policies in the Civil Services in India; Principles of Promotion; Performance Appraisal.

Position Classification
Meaning and Importance; Rank Classification-Higher Public Service under the Government of India; Duties or Position Classification.

Unit-IV
Education & Training
Objectives of Training; Types of Training-Informal, Who should be the Trainers; What should be the ‘Content’ of Training?; Training in Britain; Training in India-Training for Indian Administrative Service (I.A.S.), Training for Indian Foreign Service (I.F.S.), Training for Indian Police Service (I.P.S.), Training for Indian Audit and Accounts Service (I.A. & A.S.), Training for Income Tax Service, Training Agencies in India-Railway Staff College, Baroda; The Institute of Secretariat Training and Management, New Delhi; Administrative Staff College, Hyderabad; National Institute of Rural Development; Indian School of Public Administration (1958-1968); Indian Institute of Public Administration; Other Training Institutes in India.

Conduct and Discipline

Unit-V
Employer-Employee Relations
Right of Association-Right to Strike-Machinery for Negotiations-United Kingdom, United States, India; Staff Committees (Councils); Joint Consultative Machinery-The National Council, The Departmental Council, Regional and/or Office Council, conclusion.

Leadership
Need for Leadership, Meaning and Nature; Leadership Style-Autocratic Style, Democratic Style, Laissez Faire Style; Functions; Qualities of Leadership; Development of Leadership; How to Select Leaders?

Decision Making
Significance; Meaning and Nature; Who Makes Decisions; Bases of Decision Making; Classification; How to Make a Decision?; Problems; Decision Making and Herbert Simon.

Text Book:
1. Public Administration in India by Amreshwar Avasthi, Anand Prakash Avasthi, Publisher: Lakshmi Narain Agarwal

Reference Books:

2. Public Administration (for the UPSC and State Civil Services Preliminary Examinations) 5/E by M Laxmikanth – publisher - TATA MC Graw Hill
UNIT I

**Amplitude Modulation:** Modulation, Frequency Translation, Amplitude modulation, AM equation, Modulation index, AM generation, AM detection, Applications of linear modulation systems, Frequency division multiplexing.

UNIT II

**Angle Modulation:** Angle modulation, FM, modulation index, frequency deviation, NBFM, WBFM, Phase modulation, Comparison of FM and PM, Generation of FM, Phasor representation of FM and AM, FM demodulation, Pre-emphasis and De-emphasis, Comparison of AM and FM.

UNIT III

**Radio Transmitters & Receivers:** Classification of Radio Transmitters, AM Transmitters, FM Transmitters, Classification of Radio Receivers, TRF Receiver, Superhetrodyne Receiver, AGC.

UNIT IV

**Discrete Modulation Techniques:** Sampling, sampling Theorem for low pass and bandpass signals, Time Division Multiplexing, Pulse Amplitude Modulation, Pulse time modulation – Pulse Width Modulation and Pulse Position Modulation – generation and detection.

UNIT V


**Text Books:**

2. Communications Systems Simon Haykins, PHI.

**Reference Books:**

1. Applied Electronics and Radio Engg. GK. Mithal
2. Modern Digital and Analog Communications Systems B.P. Lathi, BSP.
UNIT- I

Earth work– Introduction, use of available equipment, suitability of job conducting, Excavation equipments, loading and lifting, transporting equipments, compacting equipments.

UNIT-II

Foundation – Introduction, blasting, Drilling, Piling, Anchoring, Drainage

UNIT-III

Concreting – Introduction, concrete mixtures, types, Concrete batching plants, vibrators, lifts, pumps, slip from shuttering

UNIT-IV

Steel fabrication, cutting, bending, cranes, reinforcement fabrication.

UNIT-V

Miscellaneous – Road Pavers, sand blasting, grouting, compressors, gate valves – control equipment for out let-and spillways, types of control gates.

Text Book:


Reference Books:

2. Hydro power stations, Varshney Rs, New chand & Bros, Roorkee
B.Tech. (CSE) Seventh Semester
EMBEDDED SYSTEMS LAB

Code: EURCS 711
Category: CE
Credits: 2
Hours: 3 per week
Department: CSE

I - Cycle

8051 Assembly Language and C-Programming and DSP programming with 8051 based Embedded system + PC, and DSP-μP based Embedded System + PC

1. 8051 Assembly Language Programming Exercises using 8051 Trainer and Pentium Class PC or VT 100/220 Terminal

2. 8051 Assembly Language Programming Exercises using 8051 Trainer, ICE-51 Module, and Pentium Class PC

3. 8051 C- programming Exercises with CYGNAL kit 8051F124DK Development Kit or equivalent, Keil C51 C-Compiler, and Pentium Class PC

4. 8051 C- programming Exercises with SPJ Systems Board - SBC 51 Single Board Computer Development System or equivalent, IDE 51 C- Compiler, and Pentium Class PC

5. DSP Programming using ADSP 2181 trainer, IDE Visual DSP ++ 3.0 C-Compiler, and Pentium Class PC

6. DSP Programming using ADSP 2181 trainer, IDE Visual DSP ++ 3.0 C-Compiler, EZICE Module and Pentium Class PC

7. DSP Programming using TMS 320C6x Development System, IDE Code Composer Studio- C Compiler, and Pentium Class PC

II CYCLE
I/O interface and I/O Programming with 8051-based System + Pentium Class PC

1 Interfacing Hex Key Board and Hex Display

2. Interfacing Multiplexed Hex Display

3. Interfacing a D.M. Printer

4. Interfacing Traffic Light Control Board

5 Interfacing Stepper Motor :
   a) With different speeds
   b) Rotating clockwise and Anti clockwise Directions
   c) Within a Given angle
B.Tech. (CSE) Seventh Semester

INDUSTRIAL TRAINING

Code : EURCS713  Category : IT
Credits: 2

i) 50 marks are allotted for report submission and seminar presentations after completion of the training.
ii) 50 marks are allotted for the viva-voce at the end of the semester.*
B.Tech(CSE) Eighth Semester
CLOUD COMPUTING

Code : EURCS 821
Category : DE
Credits: 4
Hours : 4 per week
Department: CSE

Unit I:


Unit II:


Unit III:


Unit IV:


Unit V :

Cloud Virtualization Technology: Introduction - Virtualization Defined - Virtualization Benefits - Server Virtualization - Virtualization for x86 Architecture - Hypervisor Management Software - Logical Partitioning (LPAR) - VIO Server - Virtual Infrastructure Requirements - Storage virtualization - Storage Area Networks - Network-Attached storage – CloudServerVirtualization - Virtualized Data Center

Text Book:

1. Cloud Computing: Insight into New-Era Infrastructure, Dr. Kumar Saurabh, Wiley India Pvt. Ltd.

Reference Book:

UNIT I

Evolution and Emergence of Web Services - Evolution of distributed computing, Core distributed computing technologies – client/server, CORBA, JAVA RMI, Micro Soft DCOM, MOM, Challenges in Distributed Computing, role of J2EE and XML in distributed computing, emergence of Web Services and Service Oriented Architecture (SOA).

Introduction to Web Services – The definition of web services, basic operational model of web services, tools and technologies enabling web services, benefits and challenges of using web services.

UNIT II

Web Services Architecture – Web services Architecture and its characteristics, core building blocks of web services, standards and technologies available for implementing web services, web services communication, basic steps of implementing web services, developing web services enabled applications.

Describing Web Services – WSDL – WSDL in the world of Web Services, Web Services life cycle, anatomy of WSDL definition document, WSDL bindings, WSDL Tools, limitations of WSDL.

UNIT III

Core fundamentals of SOAP – SOAP Message Structure, SOAP encoding, SOAP message exchange models, SOAP communication and messaging, SOAP security.

Developing Web Services using SOAP – Building SOAP Web Services, developing SOAP Web Services using Java, limitations of SOAP.

UNIT IV

Discovering Web Services – Service discovery, role of service discovery in a SOA, service discovery mechanisms, UDDI – UDDI Registries, uses of UDDI Registry, Programming with UDDI, UDDI data structures, support for categorization in UDDI Registries, Publishing API, Publishing information to a UDDI Registry, searching information in a UDDI Registry, deleting information in a UDDI Registry, limitations of UDDI.

UNIT V

Web Services Interoperability – Means of ensuring Interoperability, Overview of .NET and J2EE.


Text Books:

1. Developing Java Web Services, R. Nagappan, R. Skoczylas, R.P. Sriganesh, WileyIndia.
2. Developing Enterprise Web Services, S. Chatterjee, J. Webber, Pearson Education.
3. XML, Web Services, and the Data Revolution, F.P.Coyle, Pearson Education.

Reference Books :

2. Java Web Services, D.A. Chappell & T. Jewell, O’Reilly,SPD.
UNIT – I


UNIT – II


UNIT – III

Hopfield Networks: The Hopfield network(model), Recurrent and Bidirectional associative memories, counter propagation networks, ART.

UNIT – IV


UNIT – V

Fuzzy sets, fuzzy systems, and applications:

fuzzy set, Membership functions, Geometry of fuzzy sets, simple operations on fuzzy sets, fuzzy rules for Approximation Reasoning, Defuzzyfication, fuzzy engineering, applications.

Text Books:

3. Neural networks- A class room approach -SATHISH KUMAR-TMH (Unit-V)

Reference Books:

1. Artificial Neural Networks by B. Yegnanarayana – PHI publications
UNIT - I:

Network Control: Configuration Control - Security Control.

UNIT - II

SNMP Network Management Concepts: Background - Basic Concepts.
SNMP Management Information: Structure of management Information - Practical Issues. Standard MIB: MIB-II - Ethernet Interface MIB.

UNIT - III

Remote Network Monitoring: Statistics Collection: Basic Concepts, Groups: statistics, history, host, host TopN, matrix token Ring extensions to RMON.
Remote Network Monitoring: Alarms and Filters: Groups: alarm, filter, packet capture, event.

UNIT - IV

SNMPv2: Management Information: Background Structure of Management Information
SNMPv2: MIBs and Conformance: SNMPv2 Management Information Base—Conformance Statements

UNIT - V

SNMPv3: Architecture and Applications: Background - SNMPv3 Overview - SNMPv3 Architecture MIBs for SNMPv3 applications.

Text Book:
1. SNMP, SNMPv2, SNMPv3, AND RMON1 and 2, William Stallings 3rd Edn., Pearson Education

Reference Book:
1. Network Management Principles and Practice by Mani Subramanian, Pearson Education
B.Tech. (CSE) Eighth Semester
ADHOC & SENSOR NETWORKS

Code : EURCS826
Category : DE
Credits: 4
Hours : 4 per week
Department: CSE

UNIT I:
Routing: Cellular and Ad hoc wireless networks; Issues of MAC layer and Routing; Proactive, Reactive and Hybrid Routing protocols; Multicast Routing; Tree based and Mesh based protocols; Multicast with Quality of Service Provision

UNIT II:
Quality of Service: Real-time traffic support; Issues and challenges in providing QoS; Classification of QoS Solutions; MAC layer classifications; QoS Aware Routing Protocols; Ticket based and Predictive location based Qos Routing Protocols

UNIT III:
Energy Management Ad Hoc Networks: Need for Energy Management; Classification of Energy Management Schemes; Battery Management and Transmission Power Management Schemes; Network Layer and Data Link Layer Solutions; System power Management schemes

UNIT IV:
Mesh Networks: Necessity for Mesh Networks; MAC enhancements; IEEE 802.11s Architecture; Opportunistic Routing; Self Configuration and Auto Configuration; Capacity Models; Fairness; Heterogeneous Mesh Networks; Vehicular Mesh Networks

UNIT V:
Sensor Networks: Introduction to Sensor Network architecture; Data Dissemination; Data Gathering; MAC Protocols for sensor Networks; Location discovery; Quality of Sensor Networks; Evolving Standards

Text Book:

Reference Books:
UNIT – I:

Networks, Relations and Structure The Social Networks Perspective; Network Data; Boundary Specification and Sampling; Types of Networks; Network Data, Measurement and Collection

UNIT – II:

Mathematical Representation of Social Networks Graph Theoretic Notation; Sociometric Notation; Algebraic Notation; Graphs; Directed Graphs; Signed Graphs; Signed Directed Graphs; Valued Graphs; Valued Directed Graphs; Multi Graphs; Hyper Graphs; Relations; Matrices; Properties

UNIT – III:

Structural and Locational Properties Actor Centrality; Degree Centrality; Closeness Centrality; Betweenness Centrality; Information Centrality; Structural Balance; Clusterability; Generalizations of Clusterability; Transitivity

UNIT – IV:

Roles and Positions Background; Structural Equivalence; Automorphic and Isomorphic Equivalence; Regular Equivalence; Types of Ties; Local Role Equivalence; Ego Algebras

UNIT – V:

Dyadic and Triadic Methods The Dyad Census; The Example and Its Dyad Census; An Index for Mutuality; Simple Distributions on Digraphs; Conditional Uniform Distributions; The Triad Census; The Example and Its Triad Census; Mean and Variance of a Triad Census

Text Book:


Reference Books:

3. Introduction to Social Networks, Robert A. Hanneman and Mark Riddle.
UNIT I:

Introduction
Overview of Open Source Software: What is software source code?, The open source Definition, Examples of OSD-compliant licenses, Examples of open source software products, The Open source software development process.

UNIT II:

GNU/Unix Commands
Unix Commands: Common Commands, Other useful commands. Operations unique to directories and files. Users and groups permissions.
Filters: Concatenating files, Sorting, GREP and its family

UNIT III:

PROGRAMMING GNU TOOLS
Using the GNU Compiler collection tools: the C compiler (gcc) and the C++ compiler (g++).
Using the GNU debugging tool --Running Programs Under gdb, Compiling for Debugging, Starting your Program, Your Program’s Arguments.

UNIT IV:

VERSION CONTROL AND SCRIPTING
Version Control: GIT Repositories and Branches, Developing with Git
Introduction to shell: Different types of shells, Basic script components, Expressions, Decisions.

Unit V:

PYTHON PROGRAMMING
Python Tutorial : Using the Python Interpreter, An Informal Introduction to Python, More Control Flow Tools, Data Structures, Modules, Input and Output

Text Books:
1. Understanding Open Source Software development By Joseph Feller, Brian Fitzgerald, Pearson Education Limited (UNIT I)
2. Unix and shell programming by Behrouz A. Forouzan, Gilberg Thomson. (Unit II)
3. Unix and shell programming by Behrouz A. Forouzan, Gilberg Thomson. (Unit IV)

Reference Books:
1. Success of Open Source, Steve Weber
2. Producing Open Source Software, Karl Fogel

Web Resources:
2. Python Tutorial: http://docs.python.org/tutorial/ (Unit V)
4. GDB User Manual URL: http://sourceware.org/gdb/current/onlinedocs/gdb/ (Unit III)
B.Tech. (CSE) Eighth Semester
Game Programming

Code : EURCS 833
Category : DE
Credits: 4
Hours: 4 per week
Department: CSE

Unit I
Introduction to Game Programming, suitable languages for developing games and reasons, Animation framework, worms in windows and applets, full-screen worms.

Unit II
Introduction to java imaging, image loading, visual effects, and animation. Loading and playing sounds, audio effects and synthesis, and Sprites.

Unit III
Side- Scroller, Isometric Tile Game, 3-D check board and checkers3-D, loading and managing external models, lathe to make shapes, 3D- Sprites

Unit IV
Networking basics, Network chat, networked two-person game, networked virtual environment.

Unit V
Game production and project management, Game Industry roles and economics, the publisher –developer relationship, marketing, Intellectual property content, law and practice, content regulation.

Text Books:
1. Killer Game programming in Java, Andrew Davison, O’Reilly Publishers
2. Introduction to Game Development, Steve Rabin, CENGAGE Technology

Reference Books:
1. Developing Games in Java, David Brackeen
2. AI for Game Developers, David M Bourg & Glenn Seemann, O’Reilly Publishers

Web Resources:
B.Tech. (CSE) Eighth Semester
BIO-INFORMATICS

Code : EURCS 834
Category: DE
Credits: 4
Hours : 4 per week
Department: CSE

UNIT-I:

Introduction: Definitions, Sequencing, Biological sequence/structure, Genome Projects, Pattern recognition and prediction, Folding problem, Sequence Analysis, Homology and Analogy.
Protein Information resources: Biological databases, Protein pattern databases, and structure classification databases. Secondary databases, Protein pattern databases, and Structure classification databases.

UNIT-II:

Genome Information resources: DNA sequence databases, specialized genomic resources
DNA sequence analysis: Importance of DNA analysis, Gene structure and DNA sequences, Features of DNA sequence analysis, EST (Expressed Sequence Tag) searches, Gene hunting, Profile of a cell, EST analysis, Effects of EST data on DNA databases.

UNIT-III:

Pair wise alignment techniques: Database searching, Alphabets and complexity, Algorithm and programs, Comparing two sequences, sub-sequences, Identity and similarity, The Dotplot, Local and global similarity, different alignment techniques, Dynamic Programming, Pair wise database searching.

UNIT-IV:

Multiple sequence alignment: Definition and goal, The consensus, computational complexity, Manual methods, Simultaneous methods, Progressive methods, Databases of Multiple alignments and searching.
Secondary database searching: Importance and need of secondary database searches, secondary database structure and building a sequence search protocol.

UNIT-V:

Analysis packages: Analysis package structure, commercial databases, commercial software, comprehensive packages, packages specializing in DNA analysis, Intranet Packages, Internet Packages.

Text Books:
1. Introduction to Bioinformatics, T K Attwood & D J Parry-Smith pearson education

Reference Books:
1. Introduction to Bioinformatics, M. Lesk Oxford publishers (Indian Edition)
2. Bioinformatics computing Bryan Bergerar, pearson,
B.Tech. (CSE) Eighth Semester  
DATA ANALYTICS  

Code: EURCS 835  
Category: DE  
Credits: 4  
Hours: 4 per week  
Department: CSE  

UNIT-I:  
Overview: stochastic and deterministic approaches; numerical and experimental data sets; challenges in data analysis and data interpretation  

UNIT-II:  
**Linear methods of regression and classification:** linear regression and least squares; logistic regression  

UNIT-III:  
**Basis expansions and kernel methods:** piecewise polynomials; splines; kernel Hilbert spaces; local regression  
**Model selection and inference:** bias, variance and model complexity; Bayesian statistics; cross-validation; maximum likelihood  

UNIT-IV:  
**Analysis of chaotic and stochastic series:** exponential and power-law broad-band spectra; low-dimensional dynamical systems; infinite dimensional dynamical systems; singularities and exponential spectra; clustering, scaling and intermittency  

UNIT-V  
**Advanced topics:** multi-fractals; non-Brownian dynamics; non-Markovian processes; characterization of experimental and numerical data sets  

Text Books:  

Reference book:  
UNIT I:
**Introduction to performance evaluation** Techniques, metrics, and common mistakes Data presentation techniques, Ratio games

UNIT II:
**Statistical Tools:** Summarizing measured data, Basics of sampling theory, Comparing systems using sampled data, Basics of estimation theory and confidence intervals, Tests of hypotheses and significance, Parametric and non-parametric tests for goodness of fit, Regression techniques

UNIT III:
**Simulation:** Simulation basics and common mistakes, Transient removal and termination criteria, Random number Generation, Simulations with infinite-variance distributions

UNIT IV:
**Experimental design and Analysis:** Full factorial designs, full factorial designs with replications, Fractional factorial designs, one factor experiments

UNIT V:
**Other topics:** Dealing with heavy-tailed distributions. Histograms and density estimation

**Text Book:**

**Reference Books:**
B.Tech. (CSE) Eighth Semester
INDUSTRIAL ELECTRONICS

Code : EURCS 851
Category: IE*
Credits: 4
Hours : 4 per week

UNIT I

Thyristors:
Triac: Basic structure. Volt – Ampere characteristics. Positive bias and Negative bias operations.

UNIT II

Uni Junction Transistor:
Basic structure. Potential divider equivalent Static emitter characteristics. Gate circuit of SCR. Two SCRs connected back-to-back. Delayed firing of SCR by phase shifted A.C. wave. Delayed firing of SCR by UJT.

UNIT III

Plyphase Rectifiers:

UNIT IV

Resistance Welding & Heating:

UNIT V

Controller Rectifiers:
Single-phase Controlled Rectifiers: Half-wave controlled rectifier with resistance load.
Full-wave Controlled rectifier with resistance load. Three-phase Controlled Rectifiers: Half wave controlled rectifier with resistance load, Six-Phase half-wave Controlled rectifier with resistance load.

Electronic Speed Control Of Motors:
DC Motor Speed Control: Methods of speed control, single phase SCR drive. Three phase SCR drives. Closed-Loop motor control system. Half-wave feedback circuit for

Text Books:
2. Power electronics circuits, devices and applications, 2nd edition, Muhammad H Rashid, PHI
3. Utilization of Electric Power, N. V. Suryanarayana, New Age International

Reference Books:
3. International and Power Electronics, Harish C Rai, Umesh Publications
B.Tech. (CSE) Eighth Semester
COMPUTER AIDED DESIGN

Code : EURCS 852
Category: IE*
Credits: 4
Hours: 4 per week

UNIT I

UNIT II

UNIT III
Introduction to finite element Analysis – CAD techniques to finite element data preparation – Automatic mesh generation – presentation of results – 3-dimensional shape description and mesh generation – CAD applications of FEM.

UNIT IV
CAD applications and Exposure to CAD packages: Simple examples of computer aided drafting, design and analysis – introduction to simple machine elements – Analysis of cross sectional area, centroid & moment of inertia-Kinematics of crank-slider mechanism and other simple design applications. Introduction to CAD packages like ANSYS, NASTRON and NISA – II.

UNIT V
Introduction to Artificial Intelligence– Applications of AI in design and CAD.

Text Books:

Reference Books:
2. Elements of Computer Aided Design 7 manufacturing, by Y.C. Rao,
5. computer Aided Analysis & Design by S. Ghosal, Prentice Hall of India.
6. CAD/CAM/CIM by Radhakrishna, New age international.
Code : EURCS 853  
Category: IE*
Credits: 4  
Hours : 4 per week

UNIT I  
Introduction: Historical robots, robots in science fiction, future trends of robots, definitions of robots, present application status.
Robot End Effectors: Classification of end effectors, drive systems for grippers, mechanical grippers, magnetic grippers, vacuum grippers, adhesive grippers, hooks, scoops and miscellaneous devices, active and passive grippers.

UNIT II  
Robot Drives Actuators and Control: Functions of drive system, general types of control, Pump classification, and introduction to pneumatic systems, electrical drives, DC motor and transfer function, stepper motor, drive mechanisms.

UNIT III  
Robot Kinematics: Forward and reverse kinematics of 3 DOF arm, forward and reverse kinematics of 4 DOF arm, Homogeneous transformation, kinematics equations using homogeneous transformations.

UNIT IV  
Robot Sensors: Need for sensing systems, types of sensor, robot vision, robot tactile system, proximity sensors.

UNIT V  
Robot applications: Capabilities of robots, material handling, machine loading and unloading, machining and fettling robot assembly, welding, future applications. Introductory concepts.

Text Books:

1. Robotics Technology and Flexible Automation by S.R. Deb James L. Fuller

Reference Books:

2. Industrial Robotics by Harry Colestock, First Edition, TMH
UNIT I


Digital logic: Digital logic number systems, logic gates, Boolean algebra, karnaugh maps, application of logic gates, sequential logic.

UNIT II


UNIT III

Actuators: Introduction, actuator types and application areas, electromechanical actuators, DC Motors, AC Motors - fluid power actuators – piezo electric actuators.

UNIT IV

System modeling: Introduction, system modeling, mechanical system electrical system, fluid system, thermal systems, translational mechanical system with spring, damper and mass, Rotational mechanical system with spring, damper and mass, modeling electric motor, modeling pneumatic actuator.

UNIT V

Advanced Applications in Mechatronics – Sensors for condition monitoring, mechatronic control in automated manufacturing artificial intelligence in mechatronics, fuzzy logic applications in mechatronics microsensors in mechatronics.

Text Books:


Reference Book:

1. Mechatronics by Bolton, Pearson Education.
UNIT I

UNIT II
First law of thermodynamics – Corollaries – Isolated systems and steady flow systems – Specific heats at constant volume and pressure – First law applied to flow systems – systems undergoing a cycle and change of state – First law applied to steady flow processes – Limitations of first law of thermodynamics.

UNIT III

UNIT IV

UNIT V

TextBook:


Reference Books:

2. Applied Thermodynamics-II by R. Yadav
3. I.C. Engines, by Mathur and Mehta
4. I.C. Engines by V Ganesan.
B.Tech. (CSE) Eighth Semester  
DIGITAL SIGNAL PROCESSING

Code : EURCS 856  
Category: IE*  
Credits: 4  
Hours : 4 per week

UNIT I

Characterization of system is Discrete Time: Impulse response and system function \( H(z) \) of digital systems, Frequency response, Stability analysis, Direct Form-I, Direct form – II, Cascade and Parallel realization structures of digital filters, finite word length effects Limit cycle and Dead band effect.

UNIT II


UNIT III

Design of IIR filters: linear phase characteristics, Fourier series method, window function technique, comparison between IIR and FIR filters.

UNIT IV

Design of FIR filters, linear phase characteristics, Fourier series method, window function technique, comparison between IIR and FIR filters.

UNIT V

DSP architecture for signal processing, Harvard architecture, pipelining, hardware multiplier, accumulator, general purpose digital signal processors, Fixed point digital processors, floating point digital signal processors.  
Applications of DSP: in spectrum analysis and filtering, Application of DSP in audio applications, telecommunication and bio-medical.

Text Book:


Reference Books:

1. Digital Processing – A computer based approach, Sanjay K. Mitra-, TMM.
B.Tech. (CSE) Eighth Semester
ELECTRONIC MEASUREMENT & INSTRUMENTATION

Code: EURCS 857 Category: IE*
Credits: 4 Hours : 4 per week

UNIT I
Measurement Instrumentation and Calibration:
Classification of transducers–performance characteristics–calibration and standards.
Signals and their representation:

UNIT II
Dynamics of Instrument Systems:

UNIT III
Electronic Instruments:
Digital voltmeters – Digital frequency meter – digital phase angle meter. Storage oscilloscope – analog and digital type –
wave analysers – spectrum analyzers – Vector impedance meter – Q-meter-Peak reading and RMS Voltmeters.

UNIT IV
Transducers:
Advantages of Electrical Transducers – Classification of Transducers – characteristics and choice of Transducers –

UNIT V
Measurement of Non-electrical Quantities:
electrical transducers as secondary transducers – Vacuum Gauges – Torque measurement – Angular velocity using
Tachometers and digital methods. LVDT type accelerometer – Flow measurement suing electromagnetic – hot-wire
anemometer and ultrasonic types – Capacitance method for liquid level measurement.

Text Books:
1. Transducers and Instrumentation, DVS Murthy, Prentice-Hall of India.
2. Instrumentation: Devices and Systems, C.S. Rangan, G.R. Sarma and Mani, Tata
3. Modern Electronic Instrumentation and Measurement Techniques, A.D. Helfrick
   and W.D. Cooper, Prentice-Hall of India.

Reference Books:
2. Electrical and Electronics Measurements and Instrumentation, A.K. Shawnay,
   Dhanpatrai and Sons.
B.Tech. (CSE) Eighth Semester

VERY LARGE SCALE INTEGRATED SYSTEMS DESIGN (VLSI)

Code : EURCS 858
Category: IE*
Credits: 4
Hours: 4 per week

UNIT I
Review of microelectronics and Introduction to MOS technology:

UNIT II
MOS and BICMOS circuit design process:
MOS layers – stick diagrams – design rules and layout – 2m meter – 1.2 m meter CMOS rules – Layout diagrams – Symbolic diagrams.

UNIT III
Basic Circuit Concepts:

UNIT IV
Scaling of MOS circuits:
Scaling models – Scaling function for device parameters – Limitation of Scaling.
Subsystem design process:
Architectural issues – switch logic – examples of structural design (Combinational logic)– design of ALU subsystem – commonly used storage elements – aspects of design rules.

UNIT V
Test and Testability:
Design for testability built in self test (BIST) – teaching combinational logic – testing sequential logic – practical design for test guide lines – scan design techniques – etc.

Text Book:

Reference Book:
UNIT-I:
Surveying: Classification, general principles of surveying, Basic terms and delimitations in chain, campus, leveling surveying and use of surveying.

UNIT-II
Buildings Planning and Drawing: Buildings, definitions of orientation, plan, section, Elevation and site plan, classification according to NBC, Plinth area, Floor area, carpet area, Floor space index, floor area ratio, selection of site for residential buildings. Buildings regulations and Bye Laws.

UNIT-III

UNIT-IV
Water supply: types of pipes, pipe appurtenances, Type of pumps, sanitation services, Lifts, Air Conditions, Electrical installations.

UNIT-V
Units of measurement of different items of works in residential buildings.

Text Books:
1. Surveying, B.C., Punnia, Laxmi Publications (P) Ltd.
2. Planning and Designing by Gurucharan Sing, standard Publication Ltd.

Reference Book:
1. Principles of Surveying, Kenatkar, PuneVidyarthi Griha Prakashan.
UNIT I
Metallic Materials:
Non-ferrous Materials: Aluminum and its applications, Copper and its applications, Nickel and its applications.

UNIT II
Composite Materials:
Science: Polymer matrix Composites, Cement Matrix Composites Carbon Matrix Composites, Metal Matrix Composites, Ceramic matrix composites.
Applications: Structural applications, Electronic applications, Thermal applications, Electro chemical applications, environmental applications, Biomedical applications.

UNIT III
Polymeric Materials:
Types of polymerization, properties of Macro Molecules, Fabrication of plastics, Preparation of epoxy resins and polycarbonates, Carbon fibre reinforced Plastics, Molecular Computers, Rubbers and Elastomers.

UNIT IV
Ceramic & Refractory Materials:
Ceramics: Classification of white wears, Manufacturing of white wears, Earthen wear, Stine wear, Engineering applications of ceramics.

UNIT V
Electronic Materials:

Text Books:
2. Introduction to Physical materials, S.H.Aveneer, Tata McGraw-Hill

Reference Books
2. Engineering Chemistry, S.S. Dhara
Prepare the following documents for each experiment and develop the software using software engineering methodology.

2. Software Requirement Analysis: Describe the individual Phases/ modules of the project, Identify deliverables.
3. Data Modelling Use work products: data dictionary, use case diagrams and activity diagrams, build and test class diagrams, sequence diagrams and add interface to class diagrams.
5. Software Testing: Prepare test plan, perform validation testing, coverage analysis, memory leaks, develop test case hierarchy, Site check and site monitor.

List of Experiments:

1. Course Registration System
2. Quiz System
3. Online ticket reservation system
4. Remote computer monitoring
5. Student marks analysing system
6. Expert system to prescribe the medicines for the given symptoms
7. ATM system
8. Platform assignment system for the trains in a railway station
9. Stock maintenance
10. E-mail Client system.

Software Required:

Case Tools: Rational Suite, Win runner, Empirix
Languages: C/C++/JDK 1.3, JSDK, UML
Front End: VB, VC++, Developer 2000
Back End: Oracle, MS-Access, SQL