REGULATIONS & SYLLABUS

of

Bachelor of Technology

in

Electronics & Instrumentation Engineering

Programme Code: EUREI 200801

(W.e.f 2012-13 admitted batch)

Website: www.gitam.edu
B.Tech. (Electronics & Instrumentation Engineering)
Programme Code: EUREI 200801
REGULATIONS
(W.e.f. 2012-13 admitted batch)

1.0 ADMISSIONS

1.1 Admissions into B.Tech. (Electronics & Instrumentation 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>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td></td>
<td><strong>160</strong></td>
</tr>
</tbody>
</table>

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 shall be based on continuous evaluation and Semester-end examination. The marks for each component of assessment are 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 Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Theory</td>
<td>40</td>
<td>Continuous</td>
<td>i) Thirty (30) marks for mid Semester examinations. Three mid examinations shall be conducted for 15 marks each; performance in best two shall be taken into consideration.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Evaluation</td>
<td>ii) Ten (10) marks for Quizzes, Assignments and Presentations.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>60</td>
<td>Semester-end</td>
<td>Sixty (60) marks for Semester-end examinations</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Examination</td>
<td>❫</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Total</td>
<td>Total 100</td>
</tr>
<tr>
<td>2</td>
<td>Practicals</td>
<td>100</td>
<td>Continuous</td>
<td>i) Fifty (50) marks for regularity and performance, records and oral presentations in the laboratory. Weightage for each component shall be announced at the beginning of the Semester.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Evaluation</td>
<td>ii) Ten (10) marks for case studies.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>iii) Forty (40) marks for two tests of 20 marks each (one at the mid-term and the other towards the end of the Semester) conducted by the concerned lab Teacher.</td>
</tr>
<tr>
<td>3</td>
<td>Project work (VII &amp; VIII Semesters)</td>
<td>100</td>
<td>Continuous</td>
<td>i) Forty (40) marks for periodic evaluation on originality, innovation, sincerity and progress of the work, assessed by the Project Supervisor.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Evaluation</td>
<td>ii) Thirty (30) marks for mid-term evaluation for defending the Project, before a panel of examiners*.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>iii) Thirty (30) marks for final Report presentation and Viva-voce, by a panel of examiners*.</td>
</tr>
<tr>
<td>4</td>
<td>Industrial Training (VII Semester)</td>
<td>100</td>
<td>Continuous</td>
<td>i) Thirty (30) marks for Project performance, assessed by the Supervisor of the host Industry/Organization. Submission of Project Completion Certificate from host organization is mandatory.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Evaluation</td>
<td>ii) Forty (40) marks for Report and Seminar presentation on the training, assessed by the Teacher Coordinator.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>iii) Thirty (30) marks for presentation on the training, before a panel of examiners*.</td>
</tr>
<tr>
<td>5</td>
<td>Comprehensive Viva-voce (VIII Semester)</td>
<td>100</td>
<td>Continuous</td>
<td>Through five periodic Viva-voce exams for 20 marks each, conducted by a panel of examiners*. The course content for Viva exams shall be announced at the beginning of the Semester.</td>
</tr>
</tbody>
</table>

*Panel of Examiners shall be appointed by the concerned Head of the Department.
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>
</tr>
</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>Degree Level</th>
<th>CGPA</th>
</tr>
</thead>
<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.
## Scheme of Instruction : Programme Code: EUREI 200801
### B.Tech. (EIE) – I SEMESTER

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Name of the Course</th>
<th>Category</th>
<th>Credits</th>
<th>Scheme of Instruction</th>
<th>Scheme of Examination</th>
</tr>
</thead>
<tbody>
<tr>
<td>EUREG 101</td>
<td>Engg. English – I</td>
<td>HS</td>
<td>3</td>
<td>3</td>
<td>60</td>
</tr>
<tr>
<td>EURMT 102/EIRMT 102</td>
<td>Engg. Mathematics</td>
<td>MT</td>
<td>4</td>
<td>3</td>
<td>60</td>
</tr>
<tr>
<td>EURPH 103</td>
<td>Engg. Physics - I</td>
<td>BS</td>
<td>4</td>
<td>3</td>
<td>60</td>
</tr>
<tr>
<td>EURCH 104</td>
<td>Engg. Chemistry – I</td>
<td>BS</td>
<td>4</td>
<td>3</td>
<td>60</td>
</tr>
<tr>
<td>EURCS 105</td>
<td>Programming with C</td>
<td>BE</td>
<td>3</td>
<td>3</td>
<td>60</td>
</tr>
<tr>
<td>EURCS 113</td>
<td>Programming with C Lab</td>
<td>BE</td>
<td>2</td>
<td>3</td>
<td>--</td>
</tr>
<tr>
<td>EURPH 112</td>
<td>Engg. Physics Lab</td>
<td>BS</td>
<td>2</td>
<td>3</td>
<td>--</td>
</tr>
<tr>
<td>EURME 115</td>
<td>Engineering Graphics Practice</td>
<td>BE</td>
<td>2</td>
<td>4</td>
<td>--</td>
</tr>
</tbody>
</table>

Total:  24 18 09 --- 300 500

### B.Tech. (EIE) – II SEMESTER

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Name of the Course</th>
<th>Category</th>
<th>Credits</th>
<th>Scheme of Instruction</th>
<th>Scheme of Examination</th>
</tr>
</thead>
<tbody>
<tr>
<td>EUREG 201</td>
<td>Engg. English – II</td>
<td>HS</td>
<td>3</td>
<td>3</td>
<td>60</td>
</tr>
<tr>
<td>EURMT 202/EIRMT 202</td>
<td>Higher Engineering Mathematics – I</td>
<td>MT</td>
<td>3</td>
<td>3</td>
<td>60</td>
</tr>
<tr>
<td>EURMT 203/EIRMT 203</td>
<td>Higher Engineering Mathematics – II</td>
<td>MT</td>
<td>3</td>
<td>3</td>
<td>60</td>
</tr>
<tr>
<td>EURPH 204</td>
<td>Engg. Physics - II</td>
<td>BS</td>
<td>3</td>
<td>3</td>
<td>60</td>
</tr>
<tr>
<td>EURCH 205</td>
<td>Engg. Chemistry – II</td>
<td>BS</td>
<td>3</td>
<td>3</td>
<td>60</td>
</tr>
<tr>
<td>EURCS 206</td>
<td>Object Oriented programming with C++</td>
<td>BE</td>
<td>3</td>
<td>3</td>
<td>60</td>
</tr>
<tr>
<td>EURCS 213</td>
<td>Object oriented programming with C++</td>
<td>BE</td>
<td>2</td>
<td>3</td>
<td>--</td>
</tr>
<tr>
<td>EURCH 214</td>
<td>Engg. Chemistry Lab</td>
<td>BS</td>
<td>2</td>
<td>3</td>
<td>--</td>
</tr>
<tr>
<td>EUREE 217</td>
<td>Electrical &amp; Electronics Workshop Lab</td>
<td>BE</td>
<td>2</td>
<td>3</td>
<td>--</td>
</tr>
</tbody>
</table>

Total:  24 18 10 --- 360 540
### B.Tech. (EIE) – III SEMESTER

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Name of the Course</th>
<th>Category</th>
<th>Credits</th>
<th>Marks Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Semester End Exam Con. Eval. Total L T P Total</td>
</tr>
<tr>
<td>EUREI 301/</td>
<td>Advanced Engg Mathematics</td>
<td>MT</td>
<td>3</td>
<td>60 40 100 3 0 - 3</td>
</tr>
<tr>
<td>EUREC 301/</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EUREEE 301/</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EIREC 301/</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EUREI302</td>
<td>Thermal Engg. and Fluid Mechanics</td>
<td>CE</td>
<td>3</td>
<td>60 40 100 3 0 - 3</td>
</tr>
<tr>
<td>EUREI303</td>
<td>Network Theory</td>
<td>BE</td>
<td>3</td>
<td>60 40 100 3 0 - 3</td>
</tr>
<tr>
<td>EUREI304</td>
<td>Electronic Devices and Circuits</td>
<td>BE</td>
<td>3</td>
<td>60 40 100 3 0 - 3</td>
</tr>
<tr>
<td>EUREI305</td>
<td>Sensors and Transducers</td>
<td>CE</td>
<td>3</td>
<td>60 40 100 3 0 - 3</td>
</tr>
<tr>
<td>EUREI306</td>
<td>Data Structures Using C</td>
<td>CE</td>
<td>3</td>
<td>60 40 100 3 0 - 3</td>
</tr>
<tr>
<td>EUREI311</td>
<td>Sensors and Transducers Lab</td>
<td>CE</td>
<td>2</td>
<td>100 100 - - 3 3</td>
</tr>
<tr>
<td>EUREI312</td>
<td>Electronic Devices and Circuits lab</td>
<td>BE</td>
<td>2</td>
<td>100 100 - - 3 3</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>22</td>
<td>360 440 800 18 0 6 24</td>
</tr>
</tbody>
</table>

### B.Tech. (EIE) – IV SEMESTER

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Name of the Course</th>
<th>Category</th>
<th>Credits</th>
<th>Marks Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Semester End Exam Con. Eval. Total L T P Total</td>
</tr>
<tr>
<td>EUREI401</td>
<td>Digital Electronics</td>
<td>CE</td>
<td>3</td>
<td>60 40 100 3 0 - 3</td>
</tr>
<tr>
<td>EUREI402</td>
<td>Electronic Circuits and Analysis</td>
<td>CE</td>
<td>3</td>
<td>60 40 100 3 0 - 3</td>
</tr>
<tr>
<td>EUREI403</td>
<td>Electrical and Electronic Measurements</td>
<td>CE</td>
<td>3</td>
<td>60 40 100 3 0 - 3</td>
</tr>
<tr>
<td>EUREI404</td>
<td>Signals &amp; Systems</td>
<td>CE</td>
<td>3</td>
<td>60 40 100 3 0 - 3</td>
</tr>
<tr>
<td>EUREI405</td>
<td>Environmental Studies</td>
<td>HS</td>
<td>4</td>
<td>60 40 100 4 0 - 4</td>
</tr>
<tr>
<td>EUREI406</td>
<td>Electrical Machines</td>
<td>BE</td>
<td>3</td>
<td>60 40 100 3 0 - 3</td>
</tr>
<tr>
<td>EUREI411</td>
<td>Networks and Electrical machines Lab</td>
<td>BE</td>
<td>2</td>
<td>100 100 - - 3 3</td>
</tr>
<tr>
<td>EUREI412</td>
<td>Electronic Circuit Analysis lab</td>
<td>CE</td>
<td>2</td>
<td>100 100 - - 3 3</td>
</tr>
<tr>
<td>EUREI413</td>
<td>Measurements Lab</td>
<td>CE</td>
<td>2</td>
<td>100 100 - - 3 3</td>
</tr>
<tr>
<td>EUREI414</td>
<td>Industrial Tour</td>
<td>IT</td>
<td></td>
<td>Non-Credit Audit Course</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>25</td>
<td>360 540 900 19 0 9 28</td>
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</table>
### B.Tech. (EIE) – V SEMESTER

<table>
<thead>
<tr>
<th>Course code</th>
<th>Name of the Course</th>
<th>Category</th>
<th>Credits</th>
<th>Marks</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>EUREI501</td>
<td>Microprocessors &amp; Interfacing</td>
<td>CE</td>
<td>3</td>
<td>60</td>
<td>3 0 - 3</td>
</tr>
<tr>
<td>EUREI502</td>
<td>Linear IC’s &amp; Applications</td>
<td>CE</td>
<td>3</td>
<td>60</td>
<td>3 0 - 3</td>
</tr>
<tr>
<td>EUREI503</td>
<td>Industrial Instrumentation –I</td>
<td>CE</td>
<td>3</td>
<td>60</td>
<td>3 0 - 3</td>
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<tr>
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### B.Tech. (EIE) – VI SEMESTER

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### B.Tech. (EIE) – VIII SEMESTER

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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 student may select a course.**
### B.Tech. (EIE) – DEPARTMENTAL ELECTIVE-I

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<td>EUREI723</td>
<td>Data Communication &amp; Networks</td>
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### DEPARTMENTAL ELECTIVE-II

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<td>EUREI732</td>
<td>Neural Networks &amp; Fuzzy Logic</td>
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<td>EUREI733</td>
<td>Digital Image Processing</td>
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<td>EUREI842</td>
<td>Instrumentation for Petrochemical Industry</td>
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<td>EUREI843</td>
<td>Digital Control Systems</td>
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### B.Tech. (EIE) – INTER-DEPARTMENTAL ELECTIVE-I

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<td>Remote Sensing &amp; GIS</td>
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<td>EUREI 852</td>
<td>Data Base Management Systems</td>
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<td>EUREI 853</td>
<td>Software Engineering</td>
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<td>EUREI 854</td>
<td>Systems Modeling and Simulation</td>
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<td>Power Electronics</td>
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<td>EUREI 8510</td>
<td>Project Planning and Management</td>
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<td>Introduction to Micro Electro Mechanical Systems (MEMS)</td>
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### INTER-DEPARTMENTAL ELECTIVE-II

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<td>Very Large Scale Integrated System Design (VLSI)</td>
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<td>Fundamentals of Civil Engineering</td>
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B.Tech. (EIE)

Details of category wise minimum credits as per AICTE norms and actual credits allocated are as follows:

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SYLLABUS
B.Tech. (EIE) – I SEMESTER
EUREG 101: ENGINEERING ENGLISH-I

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UNIT – I


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 and 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 and Punctuation.

UNIT – V

Reading for Enrichment
Sachin Tendulkar, Michael Jackson.

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

Reference Books:
B.Tech. (EIE) – I SEMESTER
EURMT 102: ENGINEERING MATHEMATICS

<table>
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**UNIT-I**

**First order Differential Equations**
Formation – Variables separable – Homogeneous, non Homogeneous, Linear and Bernoulli equations. Exact equations - Applications of first order differential equations – Orthogonal Trajectories, Newton’s law of cooling, law of natural growth and decay.

**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

References
The aim of the course is to impart knowledge in basic concepts of Physics relevant to Engineering applications.

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 $T_c$ Superconductors - Applications.
Ultrasonics: Introduction - Production of Ultrasonics by Magnetostriction and Piezo-electric Effects - Detection and Applications of Ultrasonics.

Text Books
2. Engineering Physics, P.K.Palani samy. Scitech Publications (India) Pvt Ltd., Chennai

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


UNIT – II


UNIT – III


UNIT – IV

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**

B.Tech. (EIE) – I SEMESTER  
EURCS 105: PROGRAMMING with C

<table>
<thead>
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<th>Credits to be awarded</th>
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**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 Books

Reference Books
1. MASTERING C, by K R Venugopal, S R Prasad published by Tata McGraw Hill
2. Programming with ANSI and Turbo C by Ashok N. Kamthane, published by PEARSON Education.
The main aim of the course is to acquaint the students with basic concepts of Engineering physics using the following illustrative list of experiments.

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. 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

(i) By using size of 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
\[ \text{Sum} = 1 - \frac{x^2}{2!} + \frac{x^4}{4!} - \frac{x^6}{6!} + \frac{x^8}{8!} - \frac{x^{10}}{10!} \]

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, Date of Join, 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.
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, co
9. Intersection of solids- prism to prism, cylinder to cylinder
### B.Tech. (EIE) – II SEMESTER  
#### EUREG 201: ENGINEERING ENGLISH-II

<table>
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#### UNIT – I
Interpersonal Communication:
Introduction to Interpersonal Communication, Models of Interpersonal Relationship Development, Team Work and 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 and 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. (EIE) – II SEMESTER
EURMT202/EIRMT 202: HIGHER ENGINEERING MATHEMATICS – I

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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:** Formation of partial differential equations - Solutions of a partial differential equation - Equations solvable by direct integration - Linear equations of the first order - Non-linear equations of the first order - Homogeneous linear equations with constant coefficients - Rules for finding the complementary function - Rules for finding the particular integral.

UNIT-V


**Text Books:**

**References:**
The objective of the course is to impart knowledge in Basic concepts of Mathematics relevant to Engineering applications.

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 (self study)

UNIT-V
Laplace transforms: Transforms of elementary functions - Properties of Laplace transforms - Existence conditions - Inverse transforms - Transforms of derivatives and integrals - Multiplication by $t^n$ - Division by $t$ - Convolution theorems. Applications to ordinary differential equations and simultaneous linear equations with constant coefficients - Unit step function - Unit impulse function - Periodic functions.

Text Books

References:
UNIT – I

**Interference:** Introduction - Interference in Thin Films - Wedge Shaped Film - Newton’s Rings - Lloyd’s Mirror - Michelson’s Interferometer and Applications.

**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.

UNIT – II

**Polarisation:** Introduction - Double Refraction - Negative Crystals and Positive Crystals - Nicol’s Prism - Quarter Wave Plate and Half Wave Plate - Production and Detection of Circularly and Elliptically Polarised Lights.


UNIT – III


UNIT – IV

**Semiconductors:** Introduction - Intrinsic and Extrinsic Semiconductors - Carrier Concentration in Intrinsic Semiconductors - Carrier Concentration in n-Type Semiconductors - Carrier Concentration in p-Type Semiconductors - Hall Effect and Applications - Variation of Carrier Concentration with Temperature - Conductivity of Extrinsic Semiconductor - PN Junction - Forward Bias - Reverse Bias - VI Characteristics of a PN Junction - Fundamentals of LED, LCD - Photovoltaic Cell (Solar Cell).
UNIT – V

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.

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.

Text Books:

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


UNIT-II


UNIT-III


UNIT-IV


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 :
### B.Tech. (EIE) – II SEMESTER
EURCS 206: OBJECT ORIENTED PROGRAMMING WITH C++

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**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**
Dynamic memory allocation and deallocation (new and delete), Parameter passing methods, static class members, Arrays of Objects, Objects as Function Arguments, Default Arguments, Const Arguments, Inline functions, Function Overloading, Friend Functions, this pointer, pointers to data members and member function.

**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, Operator overloading, Rules for Operator overloading, overloading of binary and unary operators.
Files in C++: File I/O, Unformatted and Binary I/O, file handling library functions.
UNIT-V
Templates: Introduction, Class Templates, Class Templates with Multiple Parameters, Function Templates, Function Templates with Multiple Parameters, Member Function Templates.
Exception Handling: Basics of Exception Handling, Types of exceptions, Exception Handling Mechanism, Throwing and Catching Mechanism, Rethrowing an Exception, Specifying Exceptions.

Text Book:

Reference Books:
2. Object- Oriented Programming with ANSI and Turbo C++ , 1/eBy Ashok Kamthane
3. Problem Solving, Abstraction, and Design using C++ (6TH 11)Frank L. Friedman
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 "aaaAAAAAjB", 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, 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 mxn size using binary operator overloading.

14. Write a program to find transpose of a given matrix of mxn 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.
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.
## EUREE 217: ELECTRICAL & ELECTRONIC WORKSHOP LAB

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### List of Experiments

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
UNIT –I

**Functions of Complex Variables & Applications** Analytic functions, Cauchy – Ricmann equations, Harmonic functions, Application to flow problems, Some standard transformations, Conformal mappings, Special conformal mapping

\( w = z^2, w = e^z, w = z + \frac{1}{z}, w = \cosh z \).

UNIT – II

**Complex Integration** Cauchy’s theorem, Cauchy’s integral formulas, Taylors theorem (without proof), Laurents theorem (without proof) Residue theorem, evaluation of real and definite integrals.

UNIT – III

**Fourier Transforms:** Definition, Fourier integral theorem, Fourier transforms, properties of Fourier transformations, Convolution theorem, Parseval’s identity for Fourier transformations, Relation between Fourier and laplace transforms, Fourier transforms of the derivatives of a functions.

UNIT – IV


UNIT – V

**z-transforms:** z-transform – definition, some standard z-transforms – linearity property – damping rule – some standard results – shifting rules – initial and final value theorems – convolution theorem – evaluation of inverse of transform- application to difference equations.

**Text Books:**
1. Higher Engineering Mathematics by Dr. B.S.Grewal, Khanna publishers.

**Reference Books:**
UNIT-I


UNIT-II


UNIT-III


UNIT-IV

Impact of jets and turbines-force of jet on stationary and moving plates-force on curved vanes classification of hydraulic turbines-velocity triangles-work done, efficiency, specific speed pelton wheel-reaction turbines-inward and outward flow Francis and Kaplan turbines.
UNIT-V

Reciprocating pumps-types-work done-slip and coefficient of discharge-effect of acceleration and frictional resistance. Centrifugal pumps-classification-velocity triangles-specific speed.

Text Books:
1. A course in Thermodynamics and heat engines by Domkundwar, Dhanpatrai & Sons

Reference Books:
UNIT-I
DC Circuits: Active elements, passive elements, reference directions for current and voltage, Kirchoff’s laws, voltage and current division, Nodal analysis, Mesh analysis, Linearity and superposition, Thevenin’s and Norton’s theorem, Source transformation, , Concept of Duality.

UNIT-II
DC Transients: Inductor, Capacitor, Source free RL, RC and RLC response, Evaluation of initial conditions, application of Unit-step function to RL, RC and RLC circuits, concepts of Natural, Forced and Complete response.

UNIT-III
Sinusoidal Steady State Analysis: Characteristics of sinusoids, forced response to sinusoidal functions, the complex forcing function, the Phasor, impedance and admittance, nodal and mesh analysis, Application of network theorems to AC circuits, Instantaneous Power, average power, effective values of current and voltage, apparent power and power factor, complex power, parallel resonance, series resonance.

UNIT-IV

UNIT-V

Text Books:

Reference Book:
1. Circuits and Networks, Sudhakar & Syammohan, TMH
B.Tech. (EIE) – III SEMESTER
EUREI 304: ELECTRONIC DEVICES AND CIRCUITS

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UNIT-I


UNIT-II


UNIT-III

Bipolar Junction Transistor: NPN and PNP junction Transistors, Transistor current components, CB, CE and CC Configurations and their Characteristics, Saturation, Cutoff and Active Regions, Comparison of CE, CB and CC Configurations, The Ebers-moll model, Maximum voltage rating, The operating point, Various Biasing Circuits and Stabilization, Bias compensation, Thermal Runaway, Thermal Stability, Transistor Hybrid model, The h parameters of the three transistor configurations, High frequency model of a Transistor. Introduction to UJT & SCR.

UNIT-IV

Small Signal – Low Frequency Transistor amplifier Circuits: Transistor as an Amplifier, Analysis of Transistor Amplifier Circuits using h – parameters,
Linear analysis of a Transistor circuit, Miller’s theorem and it’s dual, Simplified CE and CC hybrid models, The CE amplifier with emitter resistance, Darlington pair, Analysis of Single Stage Amplifiers.

UNIT-V

Field Effect Transistors: JFET and its characteristics, Pinch off Voltage, Drain Saturation Current, Small signal model of FET, MOSFET – Enhancement and Depletion Modes, The low frequency common source and common drain amplifiers, Biasing the FET, The FET as VVR.

Text Book:

1. Integrated Electronics Analog and Digital Circuits, Jacob Millman and Christos C. Halkias, McGraw Hill.

Reference Books:

UNIT-I
Definition of sensor/transducer-Block Diagram-elements of measurement system-classification of sensors/transducers-selection criteria-static characteristics-accuracy, precision, resolution, calibration, linearity, sensitivity, range, span, signal to noise ratio (SNR), hysteresis, loading effect, repeatability, reproducibility, threshold, dead time, dead zone-dynamic characteristics-dynamic response, standard input/test signals, zero order, first order, second order responses for unit step input.

UNIT-II
Resistive transducers: Resistance potentiometer-loading effect-strain gauges-gauge factor-types of strain gauges-rosettes-resistance thermometers-construction, characteristics- thermistors- thermocouples-thermo wells- hot wire anemometer-constant current and constant temperature operation.

UNIT-III
Capacitive transducers: Introduction-Variable area type-variable air gap type-variable permittivity type-capacitive level sensor-capacitor microphone-frequency response.

UNIT-IV

UNIT-V
Fiber-optics, Digital and Smart Sensors: Introduction to fiber-optic sensors-

Text Books:

Reference Books:
B.Tech. (EIE) – III SEMESTER
EUREI 306: DATA STRUCTURES USING C

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UNIT-I
Arrays: Organization and use of one-dimensional arrays, operations, two dimensional and multidimensional arrays – Algorithms of all operations on linear arrays.

UNIT-II
Structures, pointers and files: definition of structures and unions, programming examples; pointers, pointer expression, programming examples; file operations, process.

UNIT-III
Linear Data Structures: Stack representation, operational algorithms, arithmetic expression: polish notation. Queue representation, operations, algorithms, deques, priority queues, circular queues. Linked list representation operations, algorithms, double linked and circular lists.

UNIT-IV
Non-linear Data structures: Tress, Binary tree representation, tree traversals, Huffman’s algorithms conversion of general tree to binary tree. Graph representation, Warshall’s algorithms, shortest paths, linked representation of a graph, operations of graph, traversing a graph.

UNIT-V

Text Books:
1. Programming in ANSIC – E Balaguruswamy
2. Data Structures using C - A.M. Tanebaum and others

Reference Books:
1. Data Structures – Schaum’s outline series.
2. An introduction to data structures with applications – Trembly & Sorenson.
**B.Tech. (EIE) – III SEMESTER**  
**EUREI 311: SENSORS AND TRANSDUCERS LABORATORY**

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* Minimum Twelve Experiments should be conducted from the following

1. Response of RTD  
2. Response of Thermocouple.  
3. Displacement measurement with LVDT.  
4. Speed measurement with digital stroboscopic method.  
5. Pressure measurement with piezo-resistive transmitter  
6. Characteristics of Hall Effect sensor  
7. Strain measurement.  
8. Capacitive Level sensor for liquid level measurement.  
9. Angular displacement measurement  
11. Measurement of flow using Turbine flow meter  
12. Characteristics of Synchro trans-receiver  
13. Temperature measurement using AD590.  
### B.Tech. (EIE) – III SEMESTER
### EUREI 312: ELECTRONIC DEVICES AND CIRCUITS LAB

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* Minimum Ten Experiments should be conducted from the following

1. V-I characteristics of a PN junction diode, Zener Diode & LED.
2. Zener diode Regulator.
3. Half wave Rectifier with and without capacitor filter.
4. Full wave Rectifier with and without capacitor filter.
5. Bridge Rectifier with and without capacitor filter.
7. Characteristics of CE Transistor and its h parameters.
8. Drain and Transfer Characteristics of JFET.
10. Introduction to PSPICE – PN junction characteristics, Zener diode characteristics
11. Implementation of Rectifiers using PSPICE
12. Implementation of CE amplifier using PSPICE
B.Tech. (EIE) – IV SEMESTER
EUREI 401: DIGITAL ELECTRONICS

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UNIT-I

Introductory concepts
Number systems, conversion of bases - binary arithmetic – binary codes weighted and non-weighted codes – Error detecting and error correcting codes. Logic Families: Realization of NAND gate using DTL logic, TTL logic and CMOS logic and their comparison

UNIT-II

Minimization of switching functions: Postulates and theorems - canonical forms of switching functions: SOP and POS forms – Simplification of functions: Karnaugh map and Quine Mc Cluskey methods – prime implicants - minimal functions and their properties – realization of switching functions using minimum no. of gates - multiple output functions

UNIT-III

Design of Combinational Circuits: Symbols and truth tables of logic gates: AND, OR, NOT, NAND, NOR and XOR - design using conventional gates – design using MSI and LSI devices – multiplexers, demultiplexers, decoders and priority encoders – logic design of combinational circuits: ripple carry adder, carry look ahead adder, comparator, seven-segment display, code conversion, binary addition, subtraction, ROM, PLA and PAL.

UNIT-IV

Sequential Machine Fundamentals: Combinational Vs Sequential circuits - memory elements and their excitation functions: basic RS latch, RS, D, JK and T flip-flops – conversion from one flip-flop – Classification of sequential circuits - registers, shift registers – ripple counters, synchronous counters and their design – lock out in counters
UNIT-V

**Sequential Circuits:** Synchronous Sequential Circuits: Synchronous Vs asynchronous sequential circuits – synchronous sequential circuit design: state diagram, state table, reduction of state table, state assignment, transition and output table, implementation of sequence detectors, binary counter, serial binary adder etc using various flip-flops

**Asynchronous Sequential Circuits:** Analysis and design of fundamental mode circuits – reduction of flow table – static and dynamic hazards.

**Text Books:**


**Reference Books:**

1. Introduction to Switching theory and logic design, 3rd Edition, Frederick J. Hill and Gerald R. Peterson, John Willey and sons, 1981
UNIT-I

Multistage Amplifiers: Cascading of Transistor amplifiers, Choice of transistor configuration in cascade, Frequency response of an amplifier, Bandwidth, RC coupled amplifier, Effect of bypass and coupling capacitors, High frequency current gain, Gain Bandwidth product.

UNIT-II


UNIT-III


UNIT-IV


UNIT-V


**Text Books:**
1. Integrated Electronics, Millman and Halkias, TMH, New Delhi, 2001
3. Pulse, Digital and Switching Waveforms, Millman and Taub, TMH.

**Reference Books:**
2. Electronic Devices and Circuits, Mottershead, Pearson Education.(for Chapter-4)
UNIT-I

UNIT-II

UNIT-III

UNIT-IV

UNIT-V
**Text Books:**

1. Modern Electronic Instrumentation and Measurement Techniques, A.D. Helfrick and W.D. Cooper, PHI.

**References:**

1. Electronic Instrumentation, H.S.Kalsi, TMH, 2nd Edition
B.Tech. (EIE) – IV SEMESTER
EUREI 404: SIGNALS AND SYSTEMS

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UNIT-I

Signals: Signals, Classification of signals, Transformation of independent variables, Basic continuous time signals, Basic discrete time signals, systems, classification of systems, properties of systems.

UNIT-II

LTI systems: Singularity functions, representation of signals in terms of impulses, discrete time LTI system, the convolution sum, continuous time LTI systems, the convolution integral, systems described by differential and difference equations, properties of systems, causality and stability.

UNIT-III

Fourier analysis of continuous time signals and systems: The response of continuous LTI systems to complex exponentials, the continuous time Fourier series, convergence of Fourier series, Aperiodic signals and continuous Fourier transform, periodic signals and continuous Fourier transform, properties of Fourier transform, frequency response characterized by linear constant coefficient differential equation.

UNIT-IV

Fourier analysis for discrete time signals and systems: The response of discrete time LTI systems to complex exponentials, discrete time Fourier series, discrete time Fourier transform, properties of DTFT, frequency response characterized by linear constant coefficient difference equation.

UNIT-V

Text Books:

2. Signals & Systems, P Ramesh Babu, Scitech

References:

2. Signals & Systems, Nagrath, Sharan, Rajan et. Al, TMH.
UNIT-I
The Multidisciplinary nature of environmental studies – Definition, scope and importance, need for public awareness. Natural Resources: Renewable and non-renewable resources. Natural resources and associated problems – Forest Resources: Use and over exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forests and tribal people. Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems. Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies. Food resources: world food problems, changes caused by agricultural and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies. Energy resources: growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources, case studies. Land resources: Land as a resources, land degradation, man induced landslides, soil erosion and desertification. Role of an individual in conservation of natural resources. Equitable use of resources for sustainable life styles.

UNIT-II
UNIT-III
Environmental Pollution: Definition, Causes, effects and control measures of Air Pollution, Water Pollution, Soil Pollution, Marine Pollution, Noise Pollution, Thermal Pollution, Nuclear hazards. Solid waste management: causes, effects and control measures of urban and industrial wastes. Role of an individual in prevention of pollution. Pollution case studies, Disaster Management: floods, earthquakes, cyclones and landslides.

UNIT-IV

UNIT-V

Text Book:
1. Textbook of Environmental Studies for Undergraduate Courses by Erach Bharucha.
   Published by – University Grants Commission, Universities Press, India.
B.Tech. (EIE) – IV SEMESTER
EUREI 406: ELECTRICAL MACHINES

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**UNIT-I**
DC Machines: Constructional Features, Function of Commutator, Induced EMF and Torque Expressions, Relationship Between Terminal Voltage and Induced EMF for Generator and Motoring Action, Different Types of Excitation and Performance Characteristics of Different Types of DC Machines, Starting and Speed Control of DC Motors, Losses and Efficiency, Efficiency by Direct Loading, Swinburne’s Test, Applications of DC Machines.

**UNIT-II**
Transformers: Constructional Details, EMF Equation, Equivalent Circuit, Voltage Regulation, Losses and Efficiency, Auto – Transformers, Open/Short – Circuit Tests and Determination of Efficiency and Regulation.

**UNIT-III**

**UNIT-IV**
Synchronous Machines: Generation of EMF, Constructional Details, Induced EMF, Synchronous Generator on no Load and Load, Synchronous Impedance and Voltage Regulation. V – Curves and Inverted V – Curves: Synchronous Condenser, Starting of Synchronous Motors, Applications of Synchronous Machines.

**UNIT-V**
Single – Phase Motors: Double Revolving Field Theory, Methods of Starting Single Phase Induction Motors, split phase type, capacitor start, capacitor run, shaded pole motors, Universal Motor, Stepper Motor.

**Text Books:**

2. Electrical Machines, P S Bhimbra, Khanna publishers.
* Minimum Ten Experiments should be conducted from the following

1. Verification of KVL & KCL.
2. Verification of Superposition Theorem.
3. Verification of Thevenin & Norton theorem.
4. Measurement of Two port parameters (Z & Y).
5. Calibration of Wattmeter.
6. Parameters of Choke Coil.
7. Open circuit and short circuit tests on transformer.
8. Swinburne’s test on DC shunt motor.
9. OCC and external characteristics of DC shunt generator.
10. Load test on 3-phase induction motor.
11. Load test on 1 phase induction motor.
12. Regulation of alternator by synchronous impedance method.
B.Tech. (EIE) – IV SEMESTER  
EUREI 412 ELECTRONIC CIRCUIT ANALYSIS LABORATORY

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* Minimum Twelve Experiments should be conducted from the following
  1. RC coupled amplifier: frequency response, calculation of gain and bandwidth
  2. Feedback amplifiers: frequency response calculation of gain
  3. Calculation of input, output resistance with and without feedback.
  5. Hartley Oscillator.
  6. RC Phase-Shift Oscillator.
  7. Wien-Bridge Oscillator.
  8. Class A Power Amplifier
 10. Astable Multivibrator
 11. Monostable Multivibrator
 12. Bistable Multivibrator
13. Implementation of RC coupled amplifier using PSPICE
15. Implementation of Multivibrators using PSPICE
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* Minimum Ten Experiments should be conducted from the following

7. Calibration of Multi range DC Voltmeter.
8. Calibration of Multi range DC Ammeter.
11. Design of Series type Ohmmeter.
The students will visit core industries like Instrumentation, Automation, Power Plant, Bio-Medical Engg, VLSI etc., or related research establishments.

The industries to be visited should be from the approved list by the Head of the Department. Industry should be large scale to medium scale.

At least five industries are to be visited by the student.

The industrial tour would be a week to 10 days.

The tour will be organized by the Department in the break between two semesters of their second year of study.

Each student will have to submit an individual report on the tour for assessment within 10 days of their return from the tour.
UNIT-I
Intel 8085 microprocessor: Evolution of microprocessors, Architecture of 8085, Pin diagram of 8085, Addressing modes of 8085, Memory interfacing to 8085.

UNIT-II

UNIT-III
Assembly language programming with 8086: Instruction set of 8086, Assembler directives, Writing and using procedures and assembler macros, Assembly Language program development tools, Simple programs.

UNIT-IV
Memory & I/O Interfacing: 8086-Minimum mode and maximum mode of operation, Memory organization, Addressing memory and ports in microcomputer system, Memory interfacing to 8086(SRAM and EPROM).

UNIT-V
Interrupts and Interfacing: Interrupts of 8086 and interrupt responses, Programmable peripheral interface 8255A, Programmable timer/counter 8253/8254, DMA controller 8237/8257, A/D and D/A converter interfacing and generation of waveforms.

Text Books:
1. Microprocessor Architecture Programming and applications with the 8085, Ramesh S Goankar, Perman International Pvt.Ltd.
3. Microprocessors and Interfacing: Programming and Hardware, Douglas V Hall, 2nd Ed., TMH.

Reference Books:
2. The Intel 8086 Programming, John Uffenbeck, 2nd Ed, PH India.
UNIT-I

UNIT-II
Non-linear: Comparators, Schmitt trigger, Multivibrators, Sine wave oscillators (phase-shift, weinbridge, and Quadrature), Waveform generators (triangular and sawtooth), Sample and Hold circuits, Analog multiplexers.

UNIT-III
Other Linear IC’s: 555 Timers –555 Timer as a Monostable Multivibrator, Monostable Multivibrator Applications: Frequency divider, Linear Ramp generator, 555 Timer as An Astable Multivibrator, Astable Multivibrator Applications: Free running ramp generator, FSK generator. 556 Function Generator ICs, IC 566 Voltage controlled oscillators and IC 565 PLL, PLL Applications: AM/FM detection and Frequency multiplication, Three Terminal IC (Fixed) Voltage Regulators.
UNIT-IV

A/D & D/A Converters: DAC characteristics, D to A conversion process; multiplying DAC, 8 bit D to A converter, microprocessor compatibility, serial DACs, ADC characteristics, A to D conversion process; successive approximation ADC, microprocessor compatibility, ADCs for microprocessors, frequency response of ADCs.

UNIT-V

Active Filters: First-Order LPF, HPF, BPF, BEF, All-pass Butterworth Filters, Second Order LPF, HPF. Higher Order Filters and their Comparison - Switched Capacitance Filters.

Text Books:
1. Op-Amps and Linear Integrated Circuits, Ramakanth Gayakward, Pearson Education, LPE.

Reference Books:
1. Microelectronics, Jacob Millman and Arwin. W. Grabel, TMH.
UNIT-I


UNIT-II

Measurement of speed, acceleration and vibration: speed- Revolution counter, Drag-cup tachometer, stroboscope, AC and DC-tacho-generators, capacitive tachometer, speed measurement using reluctance pick-up, photo-transducer. Acceleration- LVDT, piezo-electric, strain gauge, seismic accelerometer, mechanical vibration instruments, calibration of vibration instruments.

UNIT –III


UNIT –IV

Measurement of Density, Humidity, Moisture: pressure head type densitometer, float type densitometer, ultrasonic densitometer, bridge type gas densitometer, Humidity terms, dry and wet bulb thermometer, dew cell , electrolysis type hygrometer, commercial type dew point meter moisture terms, moisture measurement in paper, kilns.

UNIT –V

Measurement of viscosity, sound, pH: Viscosity- say bolt viscometer, Rota meter type viscometer, Sound- introduction, sound level meter, microphone- piezo electric-
electret microphone, pressure response of capacitor microphone measurement-pH.

**Text Books:**

**Reference Books:**
B.Tech. (EIE) – V SEMESTER
EUREI 504 CONTROL SYSTEMS

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UNIT-I

UNIT-II
Time domain Analysis of Control Systems: Time response First and Second order systems with standard input signals, steady state error constants, Time Response analysis of P,I,D,PI,PID controllers

UNIT-III
Concepts of stability and necessary conditions for Stability: Routh-Hurwitz criterion, relative stability analysis, the concept and construction of Root loci. Analysis of control systems with Root locus.

UNIT-IV
Frequency Response Analysis: Correlation between time and frequency responses, Polar Plots, Bode Plots, Log Magnitude versus Phase Plots, All pass and Minimum phase systems, Nyquist stability Criterion, and Constant M and N circles.

UNIT-V
State Space Analysis: Introduction, Concept of state, State variables and State Model, state model for linear continuous time systems, solutions of state equations, diagonalization, concept of controllability and observability.

Text Books:

Reference Books:
UNIT-I

Linear Modulation Systems: Modulation, Frequency Translation, Amplitude modulation, AM equation, Modulation index, Spectrum of AM Signal, power relations, AM generation and detection, SSB- generation & detection, VSB.

UNIT-II

Angle Modulation: Angle modulation, FM, FM Equation, modulation index, frequency deviation, NBFM, WBFM, Spectrum of FM, Bandwidth of FM, Carson’s rule, Phase modulation, Comparison of FM and PM, Generation of FM, Pre-emphasis and De-emphasis

UNIT-III

Discrete modulation techniques: Sampling, sampling Theorem for low pass and band pass signals, Multiplexing, TDM and FDM systems, PAM, Pulse time modulation - Pulse Width Modulation and Pulse Position Modulation – generation and detection.

UNIT-IV


UNIT-V

Text Books:

Reference Books:
UNIT-I
Characterization of systems in 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
Discrete Fourier transform (DFT): Discrete-Time Fourier transform, computation of 
DFT, circular convolution and linear convolution using DFT, overlap-add method, 
overlap-save method, Fast Fourier Transform (FFT), Radix-2 decimation-in-time 
and decimation-in-frequency algorithms, Inverse FFT.

UNIT-III
Design of IIR filters: Design of IIR filters from analog filters, Butterworth filters, 
Chebyshev filters, Comparisons, frequency transformations, design examples, 
Impulse invariant, bilinear transformation method.

UNIT-IV
Design of FIR filters: Linear phase characteristics, Frequency response of linear 
phase FIR Filters, Fourier series method, window function technique, Frequency 
sampling method, Comparison between IIR and FIR filter.

UNIT-V
DSP Architecture: Harvard architecture, pipelining, multiplier, Accumulator, general-
purpose digital signal processors, Fixed-point digital processors, floating point digital 
signal processors. Applications of DSP in spectrum analysis, filtering, 
Telecommunication and bio-medical.

Text Books:
1. Oppenheim A.V.& Schafer R.W- digital signal processing, PHI.
2. Ifeacher E.C & Jervis B.W, digital signal processing –A practical approach, 

Reference Books:
1. Sanjit K.Mitra- Digital signal processing- A computer based approach, Third 
edition TMH.
B.Tech. (EIE) – V SEMESTER
EUREI 511: DIGITAL ICs & LINEAR ICs LABORATORY

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* Minimum Twelve Experiments should be conducted from the following

1. Minimization and realization of a given function using gates
2. Function generation using decoders and multiplexers
3. Seven-segment display experiments
4. Four bit and eight bit adders and subtractors
5. Experiments on SR latch and Master-Slave JK flip-flops using SSI gates
6. Design and testing of Mod-N synchronous counters
9. Active Filters
10. 555 Timer - Monostable
11. IC Voltage Regulator.
12. D/A Converters.
13. Symmetrical Square wave generator using PSPICE
14. 555 Timer as an Astable Multivibrator using PSPICE
B.Tech. (EIE) – V SEMESTER
EUREI 512: MICROPROCESSORS LABORATORY

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* Minimum Ten Experiments should be conducted from the following

1. Arithmetic operations-Addition and subtraction.
2. Multiplication and division.
3. Block manipulation.
4. Largest number in an array, Average of n-numbers.
5. Sorting of numbers.
6. Factorial of a number, Fibonacci series
7. Hexadecimal and decimal counters
8. Interfacing of D/A converter
9. Interfacing of A/D converter
10. Interfacing of DC motor
11. Interfacing of stepper motor
12. Traffic light controller
UNIT-I

**Introduction to Thyristors:** Basic structure, operation and static V-I characteristics, Turn-on methods, Switching characteristics, gate characteristics, series and parallel operation of Thyristors. UJT- Basic structure, static emitter characteristics, potential divider equivalent circuit, SCR-Different details. Introduction to SCR , SCR- Basic structure, two transistor model, V-I characteristics, ON and OFF times of Gate, SCR rating, DIAC - Basic structure, V-I characteristics, SCS- Basic structure, two transistor equivalent, Diode transistor equivalent. TRIAC- Basic structure, V-I characteristics, Positive bias and negative bias operations

UNIT-II

**Polyphase Rectifiers:** Three-phase half wave delta-wye rectifier with resistive load. Delta to double wye half rectifier with interphase transformer and with resistive load, Three phase delta wye bridge rectifier with resistive load, general m-phase rectifier, D.C power outputs, efficiencies, and ripple factors. Transformer utility factor, rectifier performance, Commutation in poly phase rectifiers.

UNIT-III

**Controlled Rectifiers:** Single phase controlled rectifiers, half wave controlled rectifier with resistance load and RL load, Full wave controlled rectifiers with resistance load and with RL load. Three phase controlled rectifiers; half wave rectifier with resistance load, and with RL load. Six phase half wave controlled rectifiers with resistance load.

UNIT-IV

**DC motor speed control:** Methods of speed control, single-phase SCR drive,

UNIT-V
AC motor speed control: Methods of speed control, the chopper controlled rotor resistance scheme, speed control by variation of stator voltage using SCRs, closed loop speed control of an induction motor by variation of stator voltage using SCRs. Variable frequency AC motor drive. P.W.M. control scheme, Voltage fed inverter control, Current fed inverter control.

Text Books:

1. Engineering Electronics, John D. Ryder, TMH.
3. Industrial Electronics, Rasheed

Reference Books:

UNIT-I

Classification of analyzers: Classification according to properties, sample-state, signals and methods, Gas analyzers: Thermal conductivity type-, Paramagnetic method-magneto-dynamic, magnetic wind types, Zirconia Oxygen analyzer, electrochemical reaction method, opacity meters-chemiluminescence technique

UNIT-II

Liquid analyzers: Potentiometry, ORP, Redox methods, Dissolved Oxygen cell, pH measurement-construction of reference cell, measuring cell, combined cell, pH measurement circuits, Conductivity-cell and circuits, Turbidity and nephelometer.

UNIT-III

Spectroscopic techniques: The electromagnetic spectrum, classification of spectroscopic techniques. UV- Visible range spectroscopy: sources, detectors, colorimeters, spectrophotometers. Infra-red spectroscopy: Dispersive, non dispersive, single channel and double channel techniques, sources, detectors, FT IR spectrometer.

UNIT-IV

X-ray spectroscopy: Generation and characteristics of X rays, Detectors- ionization chamber, proportional counter, GM counter, scintillation counter; absorption spectroscopy; diffraction spectroscopy , fluorescence spectroscopy; construction of Goniometer and Debye-scherrer camera. Chromatography: Classification, Gas chromatography, schemes, sampling systems, detectors, study and analysis of chromatogram, principles of high pressure Liquid chromatography.
UNIT-V

**NMR spectroscopy**: Techniques and schemes, sweeping magnetic type and cross-coil types. Sampling techniques: Importance, general components, oil traps, steam injected suction system, sample preparation system in steam analysis, Environmental pollution monitoring instruments: gas pollutants-outline and techniques- carbon monoxide, sulphur dioxide, nitrogen oxides, Hydro carbons, ozone; water pollution parameters and monitoring.

**Text Book:**


**Reference Books:**

UNIT-I
Measurement of Pressure: Introduction to pressure- Manometers, Bourdon gauges, Diaphragm gauges, Bellows gauges, Bell gauges, Electrical types, Vacuum gauges- McLeod gauge, Knudsen gauge, Thermocouple gauge, Ionization gauge, Differential pressure transmitter – Pneumatic and Electrical types, Calibration of pressure gauges.

UNIT-II
Measurement of temperature: Introduction to temperature- Temperature standards, Bimetallic thermometer, filled-in thermometers, vapour pressure thermometers, Resistance thermometers, 3-lead and 4-lead arrangement, thermistor, thermocouples – types and ranges characteristics, laws of thermocouples, cold-junction compensation, thermo well, installation of thermocouples, Radiation pyrometer single and two colour pyrometers, optical pyrometer

UNIT-III
Measurement of flow: Introduction to flow- Variable head flow meters- orifice plate, venturi tube, Annubar for DP measurement, dall tube, flow nozzle, Variable area flow meters- pitot tube, Rota meter, Mass flow meters, positive displacement meters, turbine flow meter, vertex shedding flowmeter, electromagnetic flow meter, ultrasonic flow meter, laser Doppler flow meter, open channel flow measurements, solid flow measurement, Corollis flow meter, flow meters calibration

UNIT-IV
Measurement of level: Introduction to level- Sight glass, float gauge, displacer, torque tube, bubbler tube, diaphragm box D/P methods, electrical methods – resistance type, capacitance type, ultrasonic level gauging, inductive level gauge, nuclear radiation methods, radar level transmitter, solid level measurement.
UNIT-V
Sophistication in Instrumentation: Nano instrumentation-introduction- nano stylus instruments, optical instruments, scanning electron beam type instrument.
Condition monitoring- introduction, vibration monitoring, IR camera, Acoustic emission technique, ultrasonic scanning technique. Environmental pollution monitoring- Introduction, air pollution monitoring, water pollution monitoring. Introduction to online measurements and control.

Text Books:
4. Transducers and Instrumentation by -D.V.S Murthy.

Reference Books:
UNIT-I
Physiological systems and Bio-signals: Physiological systems of the body, Functional structure of the cell, resting and action potentials, functioning of the heart, physiological signal amplifiers.

UNIT-II

UNIT-III
Measurement of Biological, Physiological parameters: Measurement of blood pressure, blood volume, respiration rate, temperature, ECG, EEG, EMG and PCG, Safety measures implemented in Biomedical Instrumentation.

UNIT-IV

UNIT-V
Medical Imaging Systems: X-ray machines, Principles of computer tomography (CT), CT number scale Scanning Systems, Detector arrays. Principles of Nuclear Magnetic Resonance (NMR) and MR Imaging, T1 and T2 based imaging, Basic MRI system, Introduction to PET (elementary treatment).

Text Books:

Reference Books:
UNIT-I

UNIT-II

UNIT-III

UNIT-IV

UNIT-V

Text Books:
2. Industrial Engineering and Management by O.P.Khanna, Khanna publishers Ltd.

Reference Books:
3. Cost accounts by Shukla and Grewal, S.Chand& company, 14th ed.
4. Principles and Practice of Management by L.M.Prasad, Sulttan Chand & Sons
UNIT-I


UNIT-II

Basic control actions: Characteristics of on-off, proportional, single-speed floating Control, integral and derivative modes - composite control modes - PI, PD and PID control modes - Response of controllers for different types of test inputs – Pneumatic and electronic controllers to realize various control actions. Typical control schemes for level, flow, pressure and temperature.

UNIT-III


UNIT-IV

UNIT-V

Complex Control schemes: – Introduction – Feed Forward Control, Cascade Control – Ratio Control.
Applications of Process Control: Distillation column-Control of overhead and bottom product composite- Control of chemical reactor - control of heat exchangers - steam boiler –combustion control, drum level control.

Text Books:


Reference Book:

B.Tech. (EIE) – VI SEMESTER
EUREI 611: PROCESS CONTROL LABORATORY

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* Minimum Ten Experiments should be conducted from the following

1. Study of ON-OFF Controllers
2. Response of P, I, D and P + I + D Controllers for various test inputs using MATLAB
3. I/P converter
4. P/I Converter
5. Control valve characteristics.
6. Temperature Process Control
7. Pressure Process Control
8. Flow Process Control
9. Level Process Control
10. Response of Two-capacity liquid level process using MATLAB
11. Tuning of Controllers using MATLAB
B.Tech. (EIE) – VI SEMESTER
EUREI 612: BMI AND SIGNAL PROCESSING LAB

<table>
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* Minimum Six Experiments from Part-I, Two Experiments from Part-II and Part-III should be conducted

PART-I

1) Study and recording of ECG with Unipolar Limb leads
2) Study and recording of ECG with Bipolar Limb leads
3) Study and recording of EEG and EMG
4) Instrumentation amplifier design for ECG, EEG and EMG
5) Notch filter design for ECG, EEG and EMG
6) Study and recording of Pulse rate and Respiration rate
7) Study and recording of Heart sounds using Phono Cardio Graph
8) PC based data acquisition
9) Study of Biotelemetry system
10) Study and comparison of biomedical signals using ECG, EEG & EMG Simulators

PART-II: MATLAB

1) Representation of Discrete Time sequences and systems.
2) Filter analysis and implementation.
3) FIR and IIR Filters Design.

PART-III: EXPERIMENTS USING TMS3206713

1) Sampling.
2) Sine wave generation.
3) FIR filter Design.
4) IIR filter Design.
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 and 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 and 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:**

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


Reference Books:

B.Tech. (EIE) – VI SEMESTER
EUREI 614: PERSONALITY DEVELOPMENT

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UNIT-I
HUMAN BEHAVIOUR / PSYCHOLOGY

UNIT-II
MOTIVATION

UNIT-III
TEAM WORK: Inter Personal Skills – Group Activities – Group Discussion

UNIT-IV
CREATIVITY: Lateral Thinking – Brain Storming Etc.

UNIT-V
PRESENTATION SKILLS: Public Speaking, Anchoring- Extempore

UNIT-VI
INTERVIEW SKILLS: Non-Verbal Communication – Listening And Answering Skills

UNIT-VII
ETHICS AT WORK PLACE
UNIT-I

Introduction to Verilog: Verilog as VHDL, Levels of Design Description, Concurrency, Simulation and Synthesis, Functional Verification, System Tasks, Programming Language Interface (PLI), Module, Simulation and Synthesis Tools, Test Benches. Language Constructs and Conventions

UNIT-II


UNIT-III

UNIT-IV


UNIT-V

Designing with FPGAs and CPLDs: Xilinx 3000 Series FPGAs, Designing with FPGAs, Using a One-Hot State Assignment, Altera Complex Programmable Logic Devices (CPLDs), Altera FLEX 10K Series CPLDs, Verilog Models: Static RAM Memory, A simplified 486 Bus Model, Interfacing Memory to a Microprocessor Bus, UART Design.

Text Books:


Reference Books:

1. Advanced Digital Design with Verilog HDL – Michael D. Ciletti, PHI, 2005
UNIT-I
Introduction to concept of microcontroller, comparison of microprocessor and microcontroller, intel 8051 microcontroller architecture, pin diagram, special function registers, external memory interface with 8051, operation of I/O ports.

UNIT-II
Counters and timers in 8051, timer modes, Serial data input, output, serial data modes, interrupts, timer flag interrupt, serial port interrupt, external interrupts, software generated interrupt control, Addressing modes, external data moves, code memory, read only data moves. Push and Pop.

UNIT-III
Instruction set of 8051. Data exchange, byte level logical operations, bit level logical operations, rotate and swap operations, instruction affecting flags, incrementing, decrementing, arithmetic operations, jump and recall instruction, assembly language programming of 8051 Calls and subroutines, interrupts and returns. Member of MCS-51 family with special reference to 89C51 IC.

UNIT-IV
Applications: stepper motor control, speed/position control of ac/dc motors, control of physical parameters like temp, pressure, flow, level and humidity.

UNIT-V
Introduction m 16 bit microcontroller, Intel MCS-96 family, architecture, special interference to member with on chip EPROM, ADC, PWM etc.

Text Books:

Reference Books:
B.Tech. (EIE) – VII SEMESTER
EUREI 703: COMPUTER CONTROL OF PROCESSES

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UNIT-I

UNIT-II
Programmable logic controllers: introduction- evaluation of PLC-PLC architecture-basic structure- Program Scan, PLC programming-ladder diagram-PLC communications-PLC selection-PLC installation.

UNIT-III

UNIT – IV

UNIT-V

Text Books:
B.Tech. (EIE) – VII SEMESTER
EUREI 721: OPTIMAL CONTROL

Category: Dept Elective I.  Credits: 3  Hours: 3 per week

UNIT-I

UNIT-II
Numerical Techniques for Optimal Control: Numerical solution of 2-point boundary value problem by steepest descent and Fletcher Powell method solution of Ricatti equation by negative exponential and interactive methods.

UNIT-III

UNIT-IV

UNIT-V

Text Books:

Reference Books:
UNIT-I

UNIT-II

UNIT-III

UNIT-IV

UNIT-V

Text books:
UNIT-I
Introduction to data communications, data communication networking computer communication architecture, the OSI reference model data link controls: line configurations. Flow control, error control, and data link control protocols. Multiplexing: FDM, synchronous TDM, statistical TDM.

UNIT-II
Switching Networks: Circuit switching, Single mode networks, Digital Switching concepts, Digital private branch exchange, control signaling packet switching principles, virtual circuits and data grams, routing, traffic control, x.25 packet switching.

UNIT-III
Local, Metropolitan Area Networks: LAN/WAN/MAN technology, Bus/Tree and star topologies using metallic media optical fiber bus, the ring topology, medium access control protocols, MAC performance, LAN/WAN/MAN standards, IEEE 802.2, 802.4 IEEE 802.5, IEEE 802.6

UNIT-IV
Protocols and Architecture: Transport services, protocol mechanism, network services, the TCP/IP protocol suite, TCP, UDP and TP4, a comparison of OSI, TCP/IP and SNA architectures. Internetworking: Principle of internetworking, the bridge, routing with bridges, connection less and connection oriented internetworking. Session layer services, presentation layer facilities, presentation concepts.

UNIT-V

Text books:
1. Data and Computer communications, William Stallings, PHI, 6/e.

Reference book:
1. Data communications and Networks, Behrouz. A.Fourouzan, PHI.
UNIT-I

UNIT-II

UNIT-III
Data Acquisition in VI: Introduction to data acquisition-signal conditioning-classes of signal conditioning-field wiring and signal measurement-ground loops-A/D, D/A converters, plug-in DAQ boards- Analog input/output cards- Digital Input/Output cards-counter and timer I/o boards-Isolation-techniques-Opt isolation -Data acquisition modules with serial communication.

UNIT-IV

UNIT-V
Real time control and Applications: Design of ON/OFF controller- PID controller -electronic prototyping and testing with ELVIS- real-time data acquisition-transducer analysis-signal processing with DSP module-real-time embedded control with CRIO.

Text books :
2. Practical Data Acquisition for Instrumentation and Control Systems, John Park and Steve Mackay, Elsevier Publications.

Reference Books:
UNIT-I
Fundamentals of artificial Neural Networks: Biological neurons and their artificial models, Neural processing, learning and Adaptation. Hebbian, perceptron, delta, widrow – hoff, correlation, winner – take –all, outstar learning rules.

UNIT-II
Single Layer Perceptions: Multi player Feed forward Networks – Error back propagation training algorithm, problems with back propagation, Boltzmann training, Cauchy training, Combined back propagation/Cauchy training,

UNIT-III
Hopfield networks: Recurrent and Bi-directional Associative Memories, Counter Propagation Network, Artificial Resonance Theory (ART).

UNIT-IV

UNIT-V

Text books:

References:
UNIT-I


UNIT-II


UNIT-III


UNIT-IV

Image Compression: Definition, A brief discussion on – Run length encoding, contour coding, Huffman code, compression due to change in domain, compression due to quantization Compression at the time of image transmission. Brief discussion on:- Image Compression standards.
UNIT-V


Text Books:


Reference Books:

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* Minimum Ten Experiments should be conducted from the following

1. Loops and Structures
2. Arrays and Clusters.
3. Sub VI
4. File I/O
5. Lab VIEW signal Express
6. Time response analysis of a model
7. Frequency response analysis of a model
8. Study of PID Controller
10. Analysis of circuits using NIELVIS.
11. Creating data logger using M-Series-DAQ Board
12. Design and Testing of various circuits for control and Instrumentation.
B.Tech. (EIE) – VII SEMESTER  
EUREI 712: MICROCONTROLLERS LABORATORY

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* Minimum Ten Experiments should be conducted from the following

1. Study and use of 8051 Microcontroller trainer kit.
2. Assembly Language Program for addition of 8 bit numbers stored in array.
3. Assembly Language Program for Multiplication by successive addition of two 8bit numbers.
4. Assembly Language Program for finding largest no. from a given array of 8bit numbers.
5. Assembly Language program to arrange 8 bit numbers stored in array in ascending order.
7. Interfacing of 8 bit ADC 0809 with 8051 Microcontroller.
8. Interfacing of 8 bit DAC 0800 with 8051 Microcontroller.
9. DC motor control by 8051 Microcontroller.
10. Implementation of Serial Communication by using 8051 serial ports.
11. Assembly Language Program for use of Timer/Counter for various applications.

B.Tech. (EIE) – VII SEMESTER  
EUREI 713: PROJECT – I

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- A summary of the progress of the work carried out is to be submitted at the end of VII Semester.
- The progress of the work is to be assessed at the end of the VII semester.
The student will undergo training in any one of the approved list of industries by the Head of the Dept.

The duration of the training should be 4 to 6 weeks during summer vacation between 3rd & final years of study.

The student will submit a detailed report along with the certificate from the industry where they have undergone training to the Department for assessment within a month of return from the training.

The student will have to give a seminar on the training programme during the VII semester.
UNIT-I
INTRODUCTION TO EMBEDDED SYSTEMS: Definition and Classification, Overview of Processors and hardware units in an embedded system, Software embedded into the system, Exemplary Embedded Systems, Embedded Systems on a Chip (SoC) and the use of VLSI designed circuits

UNIT II

UNIT III
PROGRAMMING IN C: Introduction to C - Data types – Structures – Functions – Arrays – Pointers – strings - Hello world program - Super Loop architecture - delay function - Controlling the port pins - Reading switches - Basic techniques for reading and writing the port pins – Dealing with switch bounce - Adding structure to your code.

UNIT IV
EMBEDDED C: Selection of processors - programming language - operating system - Object-oriented programming with C - The Project Header (MAIN.H) – The Port Header (PORT.H) Meeting real-time constraints - Creating ‘hardware delays’ using Timer - need for ‘timeout’ mechanisms - Creating loop timeouts - Testing loop timeouts – Creating hardware timeout - Testing a hardware timeout.

UNIT V
REAL TIME OPERATING SYSTEMS: Definitions of process, tasks and threads, Clear cut distinction between functions ,ISR and tasks by their characteristics, Operating System Services- Goals, Structures, Kernel, Process Manage-

REAL TIME OPERATING SYSTEMS: RTOS Task scheduling models - Handling of task scheduling and latency and deadlines as performance metrics – Scheduling algorithms: Co-operative Round Robin Scheduling, Cyclic Scheduling with Time Slicing (Rate Monotonic Co-operative Scheduling) , Preemptive Scheduling

INTER PROCESS COMMUNICATION AND SYNCHRONISATION, Shared data problem, Use of Semaphore(s), Priority Inversion Problem and Deadlock Situations, Inter Process Communications using Signals – Semaphore Flag or mutex as Resource key, Message Queues, Mailboxes, Pipes–Virtual (Logical) Sockets, Remote Procedure Calls (RPCs).

Text books:

Reference Books:
B.Tech. (EIE) – VIII SEMESTER
EUREI 841: FIBRE OPTICS AND LASER INSTRUMENTATION

UNIT-I

Optical Fibres and Their Properties:
Principles of light propagation through a fiber - Different types of fibers and their properties - Transmission characteristics of optical fiber- Absorption losses -Scattering losses -Dispersion - Optical fiber measurement.

UNIT-II

Optical Sources and Detectors: Introduction to Optical sources LED-structures, Types, characteristics, Applications, LD, PIN structures, Types, characteristics, Applications, APD - Optical detectors, Wavelength Division Multiplexing.

UNIT-III


UNIT-IV


UNIT-V

components-Medical application of lasers-laser and tissue interaction.

**Text books:**
4. Optical communications, John senior, PHI

**References:**
4. Fibre Optic Communications, John Palais, Pearson Education
UNIT-I


UNIT-II

Unit Operations in Petroleum Industry: Thermal cracking – Catalytic cracking – Catalytic reforming – Chemical oxidation – Chemical reduction – Precipitation – Polymerization – Alkylation – Isomerization – Production of ethylene, Acetylene and Propylene from petroleum

UNIT-III

Chemical from Petroleum Products: Chemical from petroleum – Methane derivatives – Acetylene derivatives – Ethylene derivatives – Propylene derivatives – Other products

UNIT-IV

Measurement in Petrochemical Industry: Parameter to be measured in refinery and petrochemical industry – Selection and maintenance of measuring instruments – Intrinsic safety of instruments

UNIT-V

Control Loops in Petrochemical Industry: Process control in refinery and petrochemical industry – Control of distillation column control of catalytic crackers and pyrolysis Unit – Automatic control of polyethylene production – Control on vinyl chloride and PVC production.
Text book:


Reference Books:
1. Chemical from petroleum, Waddams A.L, Butter and Janner Ltd., 1968
UNIT-I

Introduction to Discrete time systems, analogous with continuous-time systems, mathematical models for LTI discrete-time systems, convolution representation and difference equations in advanced and delayed form, Z-transformation of difference equations, analysis of first, second, and higher order systems, stability of discrete-time systems, the Jury’s criterion.

UNIT-II

State space modeling of discrete-time dynamical systems, canonical forms, solution to state space equations, properties of the state transition matrix, analysis of discrete-time state equation.

UNIT-III

Equilibrium points and stability definitions, direct method of Lyapunov, definitions of controllability and observability, equivalent controllability/observability conditions. Design of state feedback and output feedback control, Design of observers.

UNIT-IV

Numerical Computations, digital simulation of state-space models, QR decomposition, singular value decomposition, digital control using digital signal processors.

UNIT-V

Introduction to Optimal Control, statement of the optimal control problem, dynamic programming general introduction to the principle of optimality, application to DTS, discrete-time linear quadratic problem, Riccati equation and its solution, optimal state feedback solution.

Text books:


Reference Books:

**B.Tech. (EIE) – VIII SEMESTER**  
**EUREI 851 – 8516: INTER DEPARTMENTAL ELECTIVE-I**

Category: Inter-Departmental Elective  
Credits: 4  
Hours: 4 per week

**Department: Other Departments (One of the following)**

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<td>Remote Sensing &amp; GIS</td>
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<td>EUREI 852</td>
<td>Data Base Management Systems</td>
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<td>EUREI 853</td>
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<td>EUREI 854</td>
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<td>EUREI 8512</td>
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<td>EUREI 8516</td>
<td>Equipment for construction Industry</td>
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### B.Tech. (EIE) VIII SEMESTER
EUREI861–8619: INTER DEPARTMENTAL ELECTIVE-II

Category: Inter-Departmental Elective  
Credits: 4  
Hours: 4 per week

**Department: Other Department (One of the following)**

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<td>EUREI 863</td>
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<td>EUREI 865</td>
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<td>EUREI 867</td>
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<td>EUREI 8611</td>
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<td>EUREI 8614</td>
<td>Very Large Scale Integrated System Design (VLSI)</td>
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<td>EUREI 8615</td>
<td>Fundamentals of Civil Engineering</td>
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<td>EUREI 8617</td>
<td>Computer Networks</td>
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<td>EUREI 8619</td>
<td>Managerial &amp; Engineering Economics</td>
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EUREI 811: INDUSTRIAL INSTRUMENTATION LABORATORY

* Minimum Ten Experiments should be conducted from the following
1. Temperature Measurement with Three-wire RTD using Lab VIEW.
2. Implementation of Strain Gauge using Lab VIEW.
3. Temperature Measurement with thermocouple using Lab VIEW.
4. LVDT characteristics using Lab VIEW
5. Flow measurement using Lab VIEW.
6. Traffic light controller using PLC.
7. Stepper Motor Controller using PLC.
8. Pressure process control using PLC.
9. Level measurement and control using PLC
10. Implementation of Pressure process using SCADA.
11. Calibration of Pressure Gauge.

Category: CE  Credits: 2    Department: EIE

Through five periodic Viva-voce exams for 20 marks each, conducted by a panel of examiners. The course content for Viva exams shall be announced at the beginning of the Semester.
B.Tech. (EIE) – VIII SEMESTER
EUREI 851 – ELECTIVE-I: REMOTE SENSING & GIS

UNIT-I:
Fundamentals of Remote Sensing:

UNIT-II:
Fundamentals of GIS:
Introduction, Elements of GIS, Vectorization, Rasterization, Geo-referencing, Map Projections, Digitization Process, Data Base handling, Types of data structures, overlay analysis, surface terrain models – Digital elevation model (DEM), Triangulated irregular network (TIN), and Slope models.

UNIT-III:
RS & GIS Techniques for Natural resources Management:
Landuse/land cover classification systems, Forest cover, agriculture and wasteland management. Water resources management.

UNIT-IV:
RS & GIS Techniques for Infrastructure Planning and Management:
Urban utilities, cadastral mapping and transport network. GPS Navigation system for various applications.

UNIT-V:
RS & GIS Techniques for Natural Disasters Management:
Earthquakes, Landslides, cyclones and Floods – Hazard Zonation, Risk assessment, Relief and Rehabilitation measures.

Text Books:
Prerequisite: File processing

UNIT I:
Introduction to DBMS – Overview, File system vs DBMS, Advantages of DBMS, Storage data, queries, Transaction Management, DBMS Structure

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

UNIT III:
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 IV:
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 V:
Transaction management, concurrency control & crash recovery – Transaction concept, transactions and schedules, concurrent execution of transactions, lock-based concurrency control, crash recovery.
Case Study: Oracle0i (SQL, PL/SQL & Triggers)

Text Book:

Reference Book:
UNIT I:

UNIT II:

UNIT III:

UNIT IV

UNIT V:

Text Book:

Reference Book:
1. Software Engineering a practitioner’s approach by Pressman
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
UNIT-V
Random Access Systems:
Aloha, Slotted Aloha, Carrier Sense Multiple Access, Delay Calculations in
CSMA/CD, Performance comparisons, Reservation Techniques.
Routing And Flow Allocation: Routing Model, Shortest Path Algorithms,
Capacity Constrains, Flow control and Routing, Routing in Practice.

Text Books:
2. Modeling and Analysis of computer Communications Networks. Networks
   Jeremiah F. Hayes, Khanna Publications.

Reference Book :
1. Geoffrey Gordon
UNIT I:
Conventional Software Management, Evaluation of Software Economics.

UNIT II:
Improving Software Economics.

UNIT III:
The old way and the new, Life-Cycle Phases.

UNIT IV:

UNIT V:
Project Organisations and Responsibilities, Process Automation. Project Control and Process Instrumentation, Tailoring the process.

Text Book:
1. Software Project Management, A real world guide to success by Joel Henry.
2. Software Project Management by Royce.
3. Software Project Management in practice by Pankaj Jalote
4. Quality Software Project Management by Futrell
UNIT I:
Introduction to Artificial Intelligence, Artificial Intelligence Problems, Artificial Intelligence Techniques, problems, problem space and search-defining the problem as a state space search, Production System, Problem Characteristics. Heuristic Search Technologies Generate & Test Hill Climbing, Best First search, Problem reduction, Constraint satisfaction, Means Endo Analysis

UNIT II:
Knowledge Representation Knowledge using predicate logic representing simple facts in logic, representing instance and is relationship, computable functions and predicates resolution.

UNIT III:

UNIT IV:

UNIT V:
Probability and bayes theorem, Certainty factors and rule – base systems bayesian networks, dempst6er – Shaffer theory.

UNIT-V
Wek & Strong Slot and Filler Structures Sematic nets, Frames, Conceptual dependencies, Scripts

Text Books:

Reference Books:
1. Artificial Intelligence structures and strategies complex problem solving – George F-Lugar Pearson Education.
UNIT-I

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 inductances – Natural commutation.

UNIT-III

UNIT-IV

UNIT-V

Text Books:
1. Power Electronics, M.Rashid. PHI
2. Power Electronics, P.S. Bimbra, Khanna Publishers
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.
UNIT–I
Project Management Systems, Organization, Scope of construction management, Significance, concept of scientific management, qualities of manager, organization – authority policy, recruitment process and training.

UNIT- II
CPM and PERT: Introduction of Pert and CPM, Planning scheduling and controlling, Bar charts, Pert and CPM networks.

UNIT–III

UNIT–IV

UNIT–V

Text Book:
1. Harvey Maylor, Mac Millan India Ltd., Delhi

Reference Book:
1. Punmia: Laxmi Publications
UNIT I


3. 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). (5 hrs)

UNIT II

1. MUMPs (Multi User MEMS Process): JDS Uniphase MUMPs processing sequence and design rules. Design rules; applications; micro hinges and deployment actuators. 5 Hrs.

2. CMOS MEMS: CMOS foundry processes, integrated IC/MEMS, MEMS postprocessing, applications. (4 Hrs)

UNIT III

1. Thermal Transducers: bimorphs, “heatuators”, cilia arrays. (3 hrs.)


3. Pieoresistivity; Scanning Probe Microscopy: scanning tunneling microscope (STM), atomic force microscope (AFM)(3 Hrs)

UNIT IV

1. Wireless MEMS: mechanical and electrical resonators, Q-factor, switches, filters (3 hrs)

2. 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 (4 hrs)
UNIT V

1. The future of MEMS: Biomems – neural implants, gene chips, diagnostic chips; MEMS in space; mechanical computers; invisible and ubiquitous computing (3 hrs)

Text Books:

4. MEMS & Microsystems TMGH 2002 by Tai-ran Hsu
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. Dr Patel V.G. Seven Business Crisis, Tata McGraw Hill

References:
Definition, nature and scope of public administration; the chief executive; leadership qualities of administrator, principles of organization; organization of Ministries of Home and Finance; personnel administration – bureaucracy; recruitment, promotion, conduct and discipline, employer – employee relations; administration at work-planning, policy formulation, decision making supervision, coordinator, integrity in administration; public corporations in India; financial administration in India; local administration in India.
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, steel fabrication, cutting, bending, cranes, reinforcement fabrication.

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

Reference Books:

3. Hydro power statins, Varshney RS, New Chand & Bros, Roorkee.
B. Tech. (EIE) – VIII SEMESTER
EUREI 861: ELECTIVE-II: ENVIRONMENTAL IMPACT ASSESSMENT

UNIT I:
Introduction to EIA. Definition of EIA and EIS. C.E. guidelines in USA, preparation of EIS, Elements of EIA.

UNIT II:
Agency Activities, Environmental setting. Environmental attributes, air, water, soil, ecology, noise. Socio-Economic aspects, Culture and human aspects (Human settlements – rehabilitations)

UNIT III:

UNIT IV:
Case studies, Economic impact analysis energy production impact analysis, cost benefit analysis, Environmental impact mitigation and control measures.

Reference Books:
UNIT I

**Introduction:** Operating systems: Fundamentals Definition, Types of O.S, Batch Processing Systems, multiprogramming catch systems, time sharing systems, distributed systems, real time systems, services, system calls, system programs.

UNIT II

**Operating system:** Process management, Process concept, Process scheduling, operations on processes, cooperating processes, threads, inter-process communications. CPU Scheduling - Scheduling algorithms, multiple processor and real time scheduling. Process synchronization – Critical lsection problems, semaphores.

UNIT III

**Leadlocks:** Characterization, handling, Prevention, Avoidance, Detection & Recovery.

UNIT IV

**Storage management:** Memory management – swapping, paging, segmentation, segmentation & paging. Virtual memory – What is virtual memory? Demand Paging, Page Relacement, frames, thrashing demand segmentation.

UNIT V

**Case study:** UNIX: Fundamental Concepts in UNIX, MS-DOS: Fundamental Concepts in MS- DOS

**Text Book:**


**Reference Book:**

1. Modern Operating Systems – Andrew S. Tanenbaum, PHI.
UNIT I
Introduction to Web Technology: Internet, WWW, Web Browsers, Web Servers, URL.

UNIT II
Introduction to HTML & DHTML: Syntax, Forms, Cascade Style Sheets.

UNIT III

UNIT IV
Introduction to Java Servelets Programming., Introduction to Applet Programming.

UNIT V
Structure of Web Application, Deploying Web Application.

Text Books:
1. Programming the World Wide Web by Robert W Sebesta
2. Professional Java Servelets 2.3 by John Bell Wrox Publical
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, NISA – II.

UNIT V
Introduction to Artificial Intelligence Introduction to Artificial Intelligence – Applications of AIin 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.
UNIT I

UNIT II

UNIT III
Actuatory: Introduction, types and application areas electromechanical actuators. DC motors AC Motor.

UNIT IV
System modeling: Introduction, system making mechanical system, electrical system, fluid system, thermal systems, translational mechanical system with spring lamper and mass. Modeling electric motor, modeling phenumatic actuator.

UNIT V
Digital logic: Digital logic numer system
Research methodology: An Introduction – meaning of research – objectives of research – motivation in research – types of research – research approaches – significance of research – research methods versus methodology – research and scientific method – importance of knowing how research is done – research process criteria of good research – Defining the research problem – selecting the problem – necessity of the defining problem – technique involved in defining a problem – an illustration – Research design:– meaning of research design – need for research design – features of a good design–important concept relating to research design – different research designs – basic principles of experimental designs.


Text Books:
Ethics, nature and purpose; ethical theories; ethics in business and management, ethics in engineering, global ethical issues, Professional Ethics concerns one’s conduct of behavior and practice when carrying out professional work. Such work may include consulting, researching teaching and writing, codes of Ethics are concerned with a range of issues, including:

1. Academic Honesty
2. Adherence to confidentiality Agreements.
3. Data Privacy
4. Handling of Human subjects
5. Impartiality in data analysis and professional consulting
6. Professional accountability

Reference:
http://www/is.cityu.edu.hk/research/resources/isworld/ethics/
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
Properties of common refrigerants, Vapor absorption system, Electrolux refrigerator.

Reference Books:

Reference Books:
2. Applied Thermodynamics-II by R. Yadav
3. I.C. Engines, by Mathur and Mehta
4. I.C. Engines by V.Ganesan.
UNIT I

Review of microelectronics and introduction to MOS technology: Introduction MOS and related VLSI technology, NMOS, CMOS, BICMOS, GaAs Technologies, Thermal aspects of processing, production of E beam masks.

UNIT II

MOS and BICMOS circuit design process: MOS layers, stick diagrams, design rules and layout, 2i-meter, 1.2i. meter CMOS rules. Layout diagrams, Symbolic diagrams.

UNIT III

Basic circuit concepts: Sheet resistance, Area capacitance of layers, delay unit, wiring capacitances, choice of layers. Scaling of MOS circuits: Scaling models, Scaling function for device parameters, Limitation of Scaling.

UNIT IV

Sub system design process: Architectural issues, switch logic, examples of structural design (Combinational logic), design of ALU sub system, commonly used storage elements, aspects of design rules.

UNIT V

Test and Testability: Design for testability built in self test (BIST), testing sequential logic, practical design for test guidelines, scan design techniques, etc.

Text Book:


Reference Book:

1. Mead, C A and Conway, L.A, Introduction to VLSI systems, Wesley-Wesley
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, Building regulations and Bye laws.

UNIT III
Building materials and Instillations: Construction materials – stone, brick, cement, cement mortar, concrete, steel, their properties – uses, Instillations – water supply – types of pipes, pipe appurtenances, Type of pumps, sanitation services, Lifts, Air conditions, Electrical instillations.

UNIT IV
Units of measurement of different items of works in residential buildings.

Reference Books:
1. Surveying by B.C.Punnia
2. Planning and Designing by Gurucharan Singh
3. Estimation, Costing, Specifications and Valuation in Civil Engineering by M.Chakravarthi.
UNIT I

UNIT II

UNIT III

UNIT IV

UNIT V

Text Books:
2. Introduction to Physical materials S.H.Aveneer. Tata Mac Grawhill
3. Text Book of Engineering Chemistry, Sashi Chawla, Dhopatrai & Sons
4. Engineering Chemistry, S.S.Dhara
UNIT I

UNIT II
The Physical Layer – The Theoretical basis for Data Communication – Guided Transmission Media The Public switched Telephone Network – Community Antenna Television – The local loop:Modems, ADSL and Wireless – Cable Modems

UNIT III

UNIT IV

UNIT V
UNIT I

UNIT II

UNIT III

UNIT IV

UNIT V

Reference Books:
2. Engineering Economics – Vol.1- Tara Chand
3. Financial Management – S.N.Maheswari
4. Essentials of Management – Koontz and O’ Donnel
5. Production and Operation management – B.S.Goel
7. Industrial Law – S.P.Jain
9. Labour and Industrial Laws – Singh, Agarwal and Goel