1. Conditions for Admission:

(a) Candidates for admission to the first semester of the 8 semester B.Tech Degree programme should be required to have passed:

The Higher Secondary Examination of the (10+2) curriculum (Academic Stream) prescribed by the Government of Tamil Nadu or any other examination equivalent there to with minimum of 45% marks (a mere pass for OBC and SC/ST candidates) in aggregate of subjects – Mathematics, Physics and any one of the following optional subjects: Chemistry / Biotechnology/ Computer Science / Biology (Botany & Zoology) or an Examination of any University or Authority recognized by the Executive Council of the Pondicherry University as equivalent thereto.

(b) For Lateral entry in to third semester of the eight semester B.Tech programme:

The minimum qualification for admission is a pass in three year diploma or four year sandwich diploma course in engineering / technology with a minimum of 60 % marks (50% marks for OBC and a mere pass for SC/ST candidates) in aggregate in the subjects covered from 3rd to final semester or a pass in any B.Sc. course with mathematics as one of the subjects of study with a minimum of 60 % marks (50% marks for OBC and a mere pass for SC/ST candidates) in aggregate in main and ancillary subjects excluding language subjects. The list of diploma programs approved for admission for each of the degree programs is given in Annexure A.

2. Age Limit:

The candidate should not have completed 21 years of age as on 1st July of the academic year under consideration. For Lateral Entry admission to second year of degree programme, candidates should not have completed 24 years as on 1st July of the academic year under consideration. In the case of SC/ST candidates, the age limit is relaxable by 3 years for both the cases.

3. Duration of Programme:

The Bachelor of Technology degree programme shall extend over a period of 8 consecutive semesters spread over 4 academic years – two semesters constituting one academic year. The duration of each semester shall normally be 15 weeks excluding examinations.
4. **Eligibility for the award of Degree:**

No candidate shall be eligible for the award of the degree of Bachelor of Technology, unless he/she has undergone the course for a period of 8 semesters (4 academic years) / 6 semesters (3 academic years for Lateral Entry candidates) in the faculty of Engineering and has passed the prescribed examinations in all the semesters.

5. **Branches of Study:**

   Branch I - Civil Engineering  
   Branch II - Mechanical Engineering  
   Branch III - Electronics & Communication Engineering  
   Branch IV - Computer Science & Engineering  
   Branch V - Electrical & Electronics Engineering  
   Branch VI - Chemical Engineering  
   Branch VII - Electronics & Instrumentation Engineering  
   Branch VIII - Information Technology  
   Branch IX - Instrumentation & Control Engineering  
   Branch X - Biomedical Engineering

or any other branches of study as and when offered. The branch allocation shall be ordinarily done at the time of admission of the candidate to the first semester.

6. **Subjects of Study:**

The subjects of study shall include theory and practical courses as given in the curriculum and shall be in accordance with the prescribed syllabus. The subjects of study for the first two semesters shall be common for all branches of study.

7. **Examinations:**

The theory and practical examinations shall comprise continuous assessment throughout the semester in all subjects as well as university examinations conducted by Pondicherry University at the end of the semester (November / December or April / May).

(a) Theory courses for which there is a written paper of 75 marks in the university examination.

The Internal Assessment marks of 25 has to be distributed as 10 marks each for two class tests and 5 marks for class attendance in the particular subject. The distribution of marks for attendance is as follows.

- 5 marks for 95% and above  
- 4 marks for 90% and above but below 95%  
- 3 marks for 85% and above but below 90%  
- 2 marks for 80% and above but below 85%  
- 1 mark for 75% and above but below 80%
In total, three tests are to be conducted and the better two are to be considered for assessment.

(b) Practical courses for which there is a university practical examination of 50 marks:
The internal assessment marks of 50 has to be distributed as 20 marks for the periodic practical works and records submitted thereof, 15 marks for an internal practical examination, 5 marks for an internal viva voce, and 10 marks for class attendance in the particular subject. The distribution of marks is as given below.

- 10 marks for 95% and above
- 8 marks for 90% and above but below 95%
- 6 marks for 85% and above but below 90%
- 4 marks for 80% and above but below 85%
- 2 marks for 75% and above but below 80%

8. Requirement for appearing for University Examination:

A candidate shall be permitted to appear for university examinations at the end of any semester only if:

(i) He / She secures not less than 75% overall attendance arrived at by taking into account the total number of periods in all subjects put together offered by the institution for the semester under consideration.

(Candidates who secure overall attendance greater than 60% and less than 75% have to pay a condonation fee as prescribed by University along with a medical certificate obtained from a medical officer not below the rank of Asst. Director)

(ii) He / She earns a progress certificate from the Head of the institution for having satisfactorily completed the course of study in all the subjects pertaining to that semester.

(iii) His / Her conduct is found to be satisfactory as certified by the Head of the institution.

A candidate who has satisfied the requirement (i) to (iii) shall be deemed to have satisfied the course requirements for the semester.

9. Procedure for completing the course:

A candidate can join the course of study of any semester only at the time of its normal commencement and only if he/she has satisfied the course requirements for the previous semester and further has registered for the university examinations of the previous semester in all the subjects as well as all arrear subjects if any.

However, the entire course should be completed within 14 consecutive semesters (12 consecutive semesters for students admitted under lateral entry).
10. **Passing Minimum:**

   (i) A candidate shall be declared to have passed the examination in a subject of study only if he/she secures not less than 50% of the total marks (Internal Assessment plus University examination marks) and not less than 40% of the marks in University examination.

   (ii) A candidate who has been declared “Failed” in a particular subject may reappear for that subject during the subsequent semesters and secure a pass. However, there is a provision for revaluation of failed or passed subjects provided he/she fulfills the following norms for revaluation.

   (a) Applications for revaluation should be filed within 4 weeks from the date of declaration of results or 15 days from the date of receipt of marks card whichever is earlier.

   (b) The candidate should have attended all the college examinations as well as university examinations.

   (c) If a candidate has failed in more than two papers in the current university examination, his/her representation for revaluation will not be considered.

   (d) The request for revaluation must be made in the format prescribed duly recommended by the Head of the Institution along with the revaluation fee prescribed by the University.

   The internal assessment marks obtained by the candidate shall be considered only in the first attempt for theory subjects alone. For the subsequent attempts, University examination marks will be made up to the total marks. Further the University examination marks obtained in the latest attempt shall alone remain valid in total suppression of the University examination marks obtained by the candidate in earlier attempts.

11 **Award of Letter Grades:**

   The assessment of a course will be done on absolute marks basis. However, for the purpose of reporting the performance of a candidate, letter grades, each carrying certain points, will be awarded as per the range of total marks (out of 100) obtained by the candidate, as detailed below:
<table>
<thead>
<tr>
<th>Range of Total Marks</th>
<th>Letter Grade</th>
<th>Grade Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>90 to 100</td>
<td>S</td>
<td>10</td>
</tr>
<tr>
<td>80 to 89</td>
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<tr>
<td>70 to 79</td>
<td>B</td>
<td>8</td>
</tr>
<tr>
<td>60 to 69</td>
<td>C</td>
<td>7</td>
</tr>
<tr>
<td>55 to 59</td>
<td>D</td>
<td>6</td>
</tr>
<tr>
<td>50 to 54</td>
<td>E</td>
<td>5</td>
</tr>
<tr>
<td>0 to 49</td>
<td>F</td>
<td>0</td>
</tr>
<tr>
<td>Incomplete</td>
<td>FA</td>
<td></td>
</tr>
</tbody>
</table>

‘F’ denotes failure in the course. ‘FA’ denotes absent / detained as per clause 8.

After results are declared, grade sheets will be issued to the students. The grade sheets will contain the following details:

(a) The college in which the candidate has studied.

(b) The list of courses enrolled during the semester and the grades scored.

(c) The Grade Point Average (GPA) for the semester and The Cumulative Grade Point Average (CGPA) of all enrolled subjects from first semester onwards.

(d) GPA is the ratio of sum of the products of the number of credits (C) of courses registered and the corresponding grades points (GP) scored in those courses, taken for all the courses and sum of the number of credits of all the courses

\[
GPA = \left( \frac{\text{Sum of } (C \times GP)}{\text{Sum of } C} \right)
\]

CGPA will be calculated in a similar manner, considering all the courses enrolled from first semester. FA grades are to be excluded for calculating GPA and CGPA.

The conversion of CGPA into percentage marks is as given below

\[
\% \text{ Marks} = (CGPA - 0.5) \times 10
\]

12 Award of Class and Rank:

(i) A candidate who satisfies the course requirements for all semesters and who passes all the examinations prescribed for all the eight semesters (six semesters for lateral entry candidates) within a maximum period of 7 years (6 years for lateral entry candidates) reckoned from the commencement of the first semester to which the candidate was admitted shall be declared to have qualified for the award of degree.

(ii) A candidate who qualifies for the award of the degree passing in all subjects pertaining to semesters 3 to 8 in his/her first appearance within 6 consecutive semesters (3 academic years) and in addition secures a CGPA of 8.50 and above for the semesters 3 to 8 shall be declared to have passed the examination in **FIRST CLASS with DISTINCTION.**
(iii) A candidate who qualifies for the award of the degree by passing in all subjects relating to semesters 3 to 8 within a maximum period of eight semesters after his/her commencement of study in the third semester and in addition secures CGPA not less than 6.5 shall declared to have passed the examination in **FIRST CLASS**.

(iv) All other candidates who qualify for the award of degree shall be declared to have passed the examination in **SECOND CLASS**.

(v) For the Award of University ranks and Gold Medal for each branch of study, the CGPA secured from 1st to 8th semester alone should be considered and it is mandatory that the candidate should have passed all the subjects from 1st to 8th semester in the first attempt. Rank certificates would be issued to the first ten candidates in each branch of study.

13. **Provision for withdrawal:**

A candidate may, for valid reasons, and on the recommendation of the Head of the Institution be granted permission by the University to withdraw from writing the entire semester examination as one Unit. The withdrawal application shall be valid only if it is made earlier than the commencement of the last theory examination pertaining to that semester. Withdrawal shall be permitted only once during the entire course. Other conditions being satisfactory, candidates who withdraw are also eligible to be awarded DISTINCTION whereas they are not eligible to be awarded a rank.

14. **Discontinuation of Course:**

If a candidate wishes to temporarily discontinue the course for valid reasons, he/she shall apply through the Head of the Institution in advance and obtain a written order from the University permitting discontinuance. A candidate after temporary discontinuance may rejoin the course only at the commencement of the semester at which he/she discontinued, provided he/she pays the prescribed fees to the University. The total period of completion of the course reckoned from the commencement of the first semester to which the candidate was admitted shall not in any case exceed 7 years, including of the period of discontinuance.

15. **Revision of Regulations and Curriculum:**

The University may from time to time revise, amend or change the regulations of curriculum and syllabus as and when found necessary.
<table>
<thead>
<tr>
<th>B.Tech courses in which admission is sought</th>
<th>Diploma courses eligible for admission</th>
</tr>
</thead>
<tbody>
<tr>
<td>Civil Engineering</td>
<td>Civil Engineering&lt;br&gt;Civil and Rural&lt;br&gt;Engineering Architectural&lt;br&gt;Assistantship Architecture&lt;br&gt;Agricultural Engineering</td>
</tr>
<tr>
<td>Mechanical Engineering</td>
<td>Mechanical Engineering&lt;br&gt;Automobile Engineering&lt;br&gt;Agricultural Engineering&lt;br&gt;Mechanical and Rural&lt;br&gt;Engineering Refrigeration and Air-conditioning Agricultural&lt;br&gt;Engineering &amp; Farm Equipment Technology&lt;br&gt;Metallurgy&lt;br&gt;Production Engineering&lt;br&gt;Machine Design &amp; Drafting&lt;br&gt;Machine tool maintenance and Repairs&lt;br&gt;Printing Technology / Engineering Textile Engineering / Technology Tool Engineering</td>
</tr>
<tr>
<td>Electrical and Electronics Engineering</td>
<td>Electrical Engineering&lt;br&gt;Electrical and Electronics Engineering&lt;br&gt;Electronics and Instrumentation Engineering&lt;br&gt;Instrumentation Engineering / Technology&lt;br&gt;Electronics and Communication Engg.&lt;br&gt;Electronics Engineering&lt;br&gt;Medical Electronics&lt;br&gt;Instrumentation and Control Engineering&lt;br&gt;Applied Electronics</td>
</tr>
<tr>
<td>Electronics &amp; Communication Engineering</td>
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</tr>
<tr>
<td>Electronic and Instrumentation Engineering</td>
<td></td>
</tr>
<tr>
<td>Instrumentation and Control Engineering</td>
<td></td>
</tr>
<tr>
<td>Bio Medical Engineering</td>
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<tr>
<td>Chemical Engineering</td>
<td>Chemical Engineering&lt;br&gt;Chemical Technology&lt;br&gt;Petrochemical&lt;br&gt;Technology Petroleum&lt;br&gt;Engineering Ceramic Technology&lt;br&gt;Plastic Engineering&lt;br&gt;Paper &amp; Pulp Technology&lt;br&gt;Polymer Technology</td>
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<tr>
<td>Information Technology</td>
<td>Computer Science and Engineering&lt;br&gt;Computer Technology&lt;br&gt;Electrical and Electronics Engineering&lt;br&gt;Electronics &amp; Communication Engineering&lt;br&gt;Electronics &amp; Instrumentation Engineering&lt;br&gt;Instrumentation Engineering / Technology</td>
</tr>
<tr>
<td>Computer Science &amp; Engineering</td>
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</tbody>
</table>
# CURRICULUM
## B.Tech. – COMPUTER SCIENCE AND ENGINEERING

### I SEMESTER

<table>
<thead>
<tr>
<th>Code No.</th>
<th>Name of the Subjects</th>
<th>Periods</th>
<th>Credits</th>
<th>Marks</th>
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<td>T</td>
<td>P</td>
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<tr>
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<tr>
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<td>T 102</td>
<td>Physics</td>
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<tr>
<td>T 103</td>
<td>Chemistry</td>
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<tr>
<td>T 104</td>
<td>Basic Electrical and Electronics Engineering</td>
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<td>1</td>
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<tr>
<td>T 105</td>
<td>Engineering Thermodynamics</td>
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<tr>
<td>T 106</td>
<td>Computer Programming</td>
<td>3</td>
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<td>P 102</td>
<td>Engineering Graphics</td>
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<tr>
<td>P 103</td>
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*To be completed in I and II semesters, under Pass / Fail option only and not counted for CGPA calculation.*

### II SEMESTER

<table>
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<tr>
<th>Code No.</th>
<th>Name of the Subjects</th>
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<th>Cr</th>
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<td>P</td>
</tr>
<tr>
<td><strong>Theory</strong></td>
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</tr>
<tr>
<td>T 107</td>
<td>Mathematics – II</td>
<td>3</td>
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<tr>
<td>T 108</td>
<td>Material Science</td>
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<tr>
<td>T 109</td>
<td>Environmental Science</td>
<td>4</td>
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</tr>
<tr>
<td>T 110</td>
<td>Basic Civil and Mechanical Engineering</td>
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<tr>
<td>T 111</td>
<td>Engineering Mechanics</td>
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<td>T 112</td>
<td>Communicative English</td>
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<tr>
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<tr>
<td>P 105</td>
<td>Chemistry lab</td>
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<td>P 106</td>
<td>Workshop Practice</td>
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<td>NSS / NCC *</td>
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*To be completed in I and II semesters, under Pass / Fail option only and not counted for CGPA calculation.*
### III Semester

<table>
<thead>
<tr>
<th>Code No.</th>
<th>Name of the Subjects</th>
<th>Periods</th>
<th>Credits</th>
<th>Marks</th>
</tr>
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<tr>
<td></td>
<td></td>
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<td>T</td>
<td>P</td>
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<tr>
<td>MA T31</td>
<td>Mathematics – III</td>
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<td>Electronics Devices and Circuits</td>
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<tr>
<td>CS T33</td>
<td>Electrical Engineering</td>
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<tr>
<td>CS T34</td>
<td>Digital System Design</td>
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<td>1</td>
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<tr>
<td>CS T35</td>
<td>Data Structures</td>
<td>3</td>
<td>1</td>
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<tr>
<td>CS T36</td>
<td>Principles of Programming and Languages</td>
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<tr>
<td>CS P31</td>
<td>Electrical and Electronics Laboratory</td>
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<td>CS P32</td>
<td>Digital Laboratory</td>
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<td>CS P33</td>
<td>Data Structures Laboratory</td>
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### IV Semester

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<th>Name of the Subjects</th>
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<th>Credits</th>
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<td>L</td>
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<tr>
<td><strong>Theory</strong></td>
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<td>CS T42</td>
<td>Microprocessors and Microcontrollers</td>
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<tr>
<td>CS T43</td>
<td>Automata Languages and Computations</td>
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<tr>
<td>CS T44</td>
<td>Design and Analysis of Algorithms</td>
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<td>CS T45</td>
<td>Object Oriented Programming Languages</td>
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<tr>
<td>CS T46</td>
<td>Computer Organization and Architecture</td>
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<tr>
<td>CS P41</td>
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<td>CS P42</td>
<td>Design and Analysis of Algorithms Laboratory</td>
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<tr>
<td>CS P43</td>
<td>Object Oriented Programming Languages Laboratory</td>
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<tr>
<td>SP P44</td>
<td>Physical Education*</td>
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* Under Pass/Fail option only and not accounted for CGPA calculation
### V Semester

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<tr>
<th>Code No.</th>
<th>Name of the Subjects</th>
<th>Theory</th>
<th>IA</th>
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<tbody>
<tr>
<td>CS T51</td>
<td>Operating Systems</td>
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<td>25</td>
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<tr>
<td>CS T52</td>
<td>Language Translators</td>
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<tr>
<td>CS T53</td>
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<td>CS T54</td>
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<td>Graphics and Image Processing</td>
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<td>Computer Networks Laboratory</td>
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### VI Semester

<table>
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<tr>
<th>Code No.</th>
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<th>Theory</th>
<th>IA</th>
<th>UE</th>
<th>TM</th>
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<tbody>
<tr>
<td>CS T61</td>
<td>Database Management Systems</td>
<td>3 1 - 4</td>
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<tr>
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### VIII Semester

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</table>
Electives for Sixth Semester

1. CS E61  Object Oriented Analysis and Design
2. CS E62  Network Design and Management
3. CS E63  E-Business
4. CS E64  Bio Informatics
5. CS E65  Information Theory and Coding Techniques
6. CS E66  Language Technologies
7. CS E67  Unix Internals
8. CS E68  Data Mining and Warehousing
9. CS E69  Advanced Databases
10. CS E610 Resource Management Techniques
11. CS E611 Agile Technologies
12. CS E612 Java Script

Electives for Seventh Semester

1. CS E71  Software Quality Assurance and Testing
2. CS E72  Component Engineering
3. CS E73  Client Server Computing
4. CS E74  Real Time Computing and Communication
5. CS E75  Software Architecture
6. CS E76  High Speed Networks
7. CS E77  N/W Protocols
8. CS E78  Modeling and Simulation
9. CS E79  Principles of Communication
10. CS E710 Software Project Management
11. CS E711 Radio Frequency Identification Technology
12. CS E712 Rational Unified Process

Electives for Eighth Semester

1. CS E81  Intelligent Information Retrieval
2. CS E82  Soft Computing
3. CS E83  Optical Networks
4. CS E84  Mobile Computing
5. CS E85  Grid Computing
6. CS E86  Agent Technology
7. CS E87  Organizational Behavior
8. CS E88  Digital System Design using VHDL
9. CS E89  Model Driven Architecture
10. CS E810 Refactoring Techniques
Unit I - Calculus
Curvature, radius of curvature, evolutes and involutes. Beta and Gamma functions and their properties.

Unit II - Multiple Integrals And Applications
Multiple integrals – change of order of integration. Applications: Areas (double integration) and volumes by triple integration (Cartesian and polar) – mass and center of mass (constant and variable densities).

Unit III - Analytical Solid Geometry
Directional cosines and ratios – angle between two lines – the equation of plane - equations to a straight line and shortest distance between two skew lines.

Unit IV - Differential Equations
Exact equations, First order linear equations, Bernoulli’s equation, orthogonal trajectories, growth and decay, geometrical applications and electric circuits. Equations not of first degree: equations solvable for p, equations solvable for y, equations solvable for x and Clairaut’s type.

Unit V - Differential Equations (Higher order)
Linear differential equations of higher order – with constant coefficients, the operator D - Euler’s linear equation of higher order with variable coefficients - simultaneous linear differential equations – solution by variation of parameters method – simple applications to electric circuits.

Text Books

Reference Books
Unit I – Acoustics & NDT

ultrasonics - Ultrasonic Waves Productions (Piezoelectric & Magnetostriction method) – Detections (Acoustic Grating)

Acoustics - Factors affecting Acoustic of Buildings (Reverberation, Loudness, Focusing, Echo, Echelon Effect and Resonance) and their Remedies - Sabine’s formula for Reverberation Time

NDT applications - Pulse Echo Method - Liquid Penetrant Method

Unit II – Optics

Interference - Air Wedge – Michelson’s Interferometer – Wavelength Determination – Interference Filter – Antireflection Coatings

Diffraction - Diffraction Grating – Dispersive power of grating - Resolving Power of Grating & Prism


Unit III – Lasers & Fiber Optics


Fiber Optics - Principle and Propagation of light in optical fiber – Numerical aperture and acceptance angle – Types of optical fibers (material, refractive index, mode)

Unit IV – Wave mechanics


Unit V – Nuclear energy source


Text Books


Reference Books

Unit I - Water


Unit II – Polymers


Unit III - Electrochemical Cells


Unit IV - Corrosion And Its Control


Unit V - Phase Rule

Definition and derivation of phase rule. Application to one component system - water and sulphur systems. Thermal analysis, condensed phase rule. Two component alloy systems - Pb-Ag, Cu-Ni and Mg-Zn systems.

Text books

Reference Books
Part A - Electrical

Unit – I

Unit – II
Node and mesh methods of analysis of DC circuits and simple AC circuits. Introduction to three phase circuits. Introduction to three phase system - phase and line parameters – relations, power measurement – voltmeter and ammeter method, two and three wattmeter methods.

Unit – III
Principle of DC generator and motor, Transformer, synchronous generator, induction motor (single phase). Sources for electrical energy conversion-thermal and hydraulic plant (Block diagram approach only). Components of AC transmission and distributions systems – line diagram.

Part B – Electronics

Unit – IV
Half-wave rectifier and Full-wave rectifier- filters - Amplifiers-common emitter and common collector amplifiers- Hartley oscillator and RC phase shift oscillator. Transducers – Resistance temperature detector (RTD) – Linear variable differential transformer (LVDT) - Strain gauge – Piezo electric transducer.

Unit – V

Unit – VI
Model of communication system – Analog and digital – Wired and wireless channel. Block diagram of various communication systems – Microwave, satellite, optical fiber and cellular mobile system. Network model – LAN, MAN and WAN – Circuit and packet switching – Overview of ISDN.

Text Books

Reference Books
Unit I - Basic Concepts and Definitions
Energy conversion and efficiencies - System, property and state - Thermal equilibrium - Temperature - Zeroth law of Thermodynamics.

Unit II - First Law of Thermodynamics
The concept of work and adiabatic process - First law of thermodynamics - Conservation of Energy principle for closed and open systems - Calculation of work for different processes of expansion of gases

Unit III - Second Law of Thermodynamics
Equilibrium and the second law - Heat engines - Kelvin-Planck statement of second law of thermodynamics - Reversible and irreversible processes - Carnot principle - Clausius inequality - Entropy

Unit IV - Gas Power Cycles
Air standard cycles: The air standard Carnot cycle - Air standard Otto cycle, diesel cycle, dual cycle and Bryton cycles and their efficiencies

Unit V - Refrigeration Cycles and Systems
Reverse Carnot cycle - COP - Vapor compression refrigeration cycle and systems (only theory) - Gas refrigeration cycle - Absorption refrigeration system (only theory) - Liquifaction and solidification of gases

Text Books

Reference Books
T 106 COMPUTER PROGRAMMING

Unit – I

Unit – II
Problem solving techniques – Program – Program development cycle – Algorithm design – Flowchart - Pseudo code.
Introduction to C – C tokens – data types – Operators and expressions – I/O functions

Unit – III
Decision making statements – branching and looping – arrays – multidimensional arrays – Functions – Recursion – Passing array to functions
Storage classes – Strings – String library functions

Unit – IV
Structures – Arrays and Structures – nested structures – passing structures to functions – user defined data types– Union
Pointers – pointers and arrays – pointers and functions - pointers and strings - pointers and structures

Unit – V
Files – operations on a file – Random access to files – command line arguments
Introduction to preprocessor – Macro substitution directives – File inclusion directives – conditional compilation directives – Miscellaneous directives

Text Books

Reference Book
List of Exercises

OS Commands, Word Processor and Spreadsheets
1. Study of OS commands-Compilation and execution of simple C programs
2. Use of mail merge in word processor
3. Use of spreadsheet to create Charts(XY, Bar, Pie) and apply the formulae wherever necessary C Programming (Flowcharts and algorithms are essential for the programming exercises)
4. Greatest of three numbers using conditional operator and if statement
5. Read two numbers and swap those two numbers using temporary variable and without using temporary variable.
6. Solve quadratic equation for different sets of inputs.
7. Use of Switch….Case statements
8. Generation of prime and Fibonacci series
9. Evaluate the COSINE series using for, while and do while loops
10. Matrix operations
   a) Addition
   b) Transpose
   c) Multiplication
11. Evaluate the sin(x) series using functions and recursive functions
12. Read a string and find solution to remove the duplicates of a given string from the given sentence
13. Create an array of structures for a list of items with the following details

<table>
<thead>
<tr>
<th>Item-Code</th>
<th>Item_Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>102</td>
<td>Paste – Colgate</td>
</tr>
<tr>
<td>102</td>
<td>Paste – Pepsodent</td>
</tr>
<tr>
<td>102</td>
<td>Paste – Close-up</td>
</tr>
<tr>
<td>101</td>
<td>Soap – Cinthol</td>
</tr>
<tr>
<td>101</td>
<td>Soap – Lux</td>
</tr>
<tr>
<td>101</td>
<td>Soap – Hamam</td>
</tr>
<tr>
<td>101</td>
<td>Soap – Dove</td>
</tr>
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</table>

Arrange the set of items in ascending order of its Item_Code and descending order of its Item_name as given below

<table>
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<th>Item-Code</th>
<th>Item_Name</th>
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</thead>
<tbody>
<tr>
<td>101</td>
<td>Soap – Lux</td>
</tr>
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<td>101</td>
<td>Soap – Hamam</td>
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<td>Paste – Pepsodent</td>
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<td>Paste – Colgate</td>
</tr>
<tr>
<td>102</td>
<td>Paste – Close-up</td>
</tr>
</tbody>
</table>

14. Use of Structure to define a user defined data types, input the data and write the data into the file
15. Use of pointers and array of pointers
16. Functions with static data types
17. Write command line program to implement the following DOS commands using files
   - Del
   - Copy
Unit 0
Introduction to Standards for Engineering Drawing practice, Lettering, Line work and Dimensioning

Unit I
Conic sections, Involutes, Spirals, Helix. Projection of Points, Lines and Planes

Unit II
Projection of Solids and Sections of Solids.

Unit III
Development of surfaces - Intersection of surfaces (cylinder-cylinder, cylinder-cone)

Unit IV
Isometric projections and Orthographic projections

Unit V
Computer Aided Drafting: Introduction to Computer Aided Drafting hardware - Overview of application software - 2D drafting commands (Auto CAD) for simple shapes - Dimensioning.

Text Books

Reference Books
P 103  BASIC ELECTRICAL AND ELECTRONICS LAB

Electrical Lab
1. Study of tools and accessories
2. Study of joints
3. Staircase wiring
4. Doctor’s room wiring
5. Godown wiring
6. Tube Light and Fan connection
7. Lamp controlled from three different places-wiring

Electronics Lab
1. Rectifiers
   Construction of half wave and full wave rectifiers with and without filters – Calculation of ripple factors.

2. Frequency Response of RC Coupled Amplifiers
   Determination of frequency response of given RC coupled amplifier - Calculation of bandwidth.

3. Verification of Kirchoff’s Voltage and Current Laws
   Determine the voltage and current in given circuits using Kirchoff’s laws theoretically and verify the laws experimentally.

4. Study of Logic Gates
   a. Verification of Demorgan’s theorems
   b. Verification of truth tables of OR, AND, NOT, NAND, NOR, EX-OR, EX-NOR gates and Flipflops - JK, RS, T and D
   c. Implementation of digital functions using logic gates

5. Study of CRO
   a. Measurement of AC and DC voltages
   b. Frequency and phase measurements (using Lissajou’s figures)

6. Study of Transducers
   a. Displacement and load measurements with transducers
   b. Temperature measurement with thermocouple
Unit I - Algebra
Binomial, exponential and logarithmic series (without proof) – problems on summation, approximation and coefficients.

Unit II – Matrices
Inverse of matrix by row transformation – Eigen values and Eigen vectors - Cayley-Hamilton theorem (without proof) – Diagonalisation – rank of matrix – solution of a general system of m linear algebraic equations in n unknown (m ≤ n).

Unit III – Trigonometry
Expansions for \( \sin^n \theta, \cos^n \theta, \tan^n \theta, \sin (n\theta), \cos(n\theta), \tan (n\theta) \). Exponential, circular, hyperbolic, inverse hyperbolic and logarithmic functions of a complex variable – separation of real and imaginary parts.

Unit IV - Vector Analysis
Scalar fields and Vector fields – Gradient, Divergence and Curl – their properties and relations – Gauss and Stokes theorems (without proof), simple problems for their verification.

Unit V - Statistics
Moments, kurtosis and skewness based on moments only. Probability distributions: Binomial, Poisson and Normal - evaluation of statistical parameters for these three distributions. Correlation and regression – rank correlation.

Text Books

Reference Book
Unit I - Crystal structure and Defects
Crystal Systems – Bravais Lattices – Coordination Number, Atomic Radius, Packing Factor for FCC & HCP structures – Miller Indices for a cubic crystal – Powder X Ray Diffraction Method - Lattice defects – Qualitative ideas of point, line, surface and volume defects

Unit II – Dielectric properties
Dielectric Polarization and Mechanism – Internal or local Field - Clausius-Mossotti relation – Dielectric loss - Temperature and frequency dependence of dielectric constant – Measurement of Dielectric constant and loss using Scherring bridge – Elementary ideas of Piezoelectrics, Ferroelectrics and Pyroelectric materials and its Applications

Unit III – Magnetic Properties

Unit IV – Semiconductors and superconductors

Unit V – Advanced Materials
Liquid Crystals – Types – Application as Display Devices – Metallic Glasses – Nanomaterials (one, Two & three Dimensional) – Physical Properties and Applications of Carbon Nano Tubes

Text books

Reference Books
7. T 109 ENVIRONMENTAL SCIENCE

Unit I - Environmental Segments And Natural Resources


Unit II - Ecosystem & Biodiversity


Unit III - Air Pollution

Air pollution-sources of air pollution. Sources, effects and control measures of oxides of nitrogen, oxides of sulphur, oxides of carbon, hydrocarbon, chlorofluoro carbons and particulates. Greenhouse effect-causes and effects on global climate and consequences. Ozone depletion-causes, mechanism and effect on the environment. Smog-sulfurous and photochemical smog-effect on the environment. Acid rain-theory of acid rain and effects.

Unit IV - Water Pollution And Solid Waste Management

Sources, effects and control measures of-water pollution, soil pollution, marine pollution, noise pollution, thermal pollution and radioactive pollution. Solid waste management—causes, effect and control measures of urban and industrial wastes.

Unit V - Social Issues And The Environment

Text Books

Reference Books
2) Sodhi G. S., Fundamental concepts of environmental chemistry, Narosa publishing house, New Delhi
Part-A Civil Engineering

Unit I - Buildings, Building Materials
Buildings-Definition-Classification according to NBC-plinth area, Floor area, carpet area, floor space index-construction materials-stone, brick, cement, cement-mortar, concrete, steel- their properties and uses.

Unit II - Buildings and their components
Buildings- Various Components and their functions. Soils and their classification Foundations-Functions and types of foundations, Masonry, Floors-functions and types of floors, Roofs and types of roofs.

Unit III - Basic Infrastructure

PART - B Mechanical Engineering

Unit IV - Internal and external combustion systems
Working principles of IC engines – Classification – Diesel and petrol engines: two stroke and four stroke engines. Steam generators(Boilers) – Classification – Constructional features (of only low pressure boilers) – Boiler mountings and accessories.

Conventional Power Generation Systems
Hydraulic, steam and gas turbines power plants – Schemes and layouts – Selection criteria of above power plants.

Unit V - Non-Conventional Energy Systems (Description Only)
Solar thermal systems – Solar photovoltaic – Solar pond – wind, wave, tidal, geothermal and ocean thermal energy conversion systems.
Casting
Green and dry sand moulding processes for ferrous and non-ferrous metals – applications.

Unit VI - Metal Joining
Elements of arc and gas welding, brazing and soldering – Bolted joint types – Adhesive Bonding; classification of adhesives – applications. Sheet Metal Processing Punching, blanking, shearing, bending, and deep drawing processes; descriptions and applications
Text Books

For Part –A

For Part –B

Reference Books
T 111  ENGINEERING MECHANICS

Unit I - Fundamental of Mechanics
Basic Concepts Force System and Equilibrium, Definition of Force, Moment and Couple, Principle of Transmissibility, Varignon’s theorem, Resultant of force system – Concurrent and non concurrent coplanar forces, Condition of static equilibrium for coplanar force system, stability of equilibrium, concept of free body diagrams, applications in solving the problems on static equilibrium of bodies.

Unit II - Plane Trusses
Degrees of freedom, Types of supports and reactions, Types of loads, Analysis of Trusses-method of joints, method of sections.
Friction. Introduction, Static dry friction, simple contact friction problems, ladders, wedges, screws and belt friction.

Unit III - Properties of Surfaces
Properties of sections – area, centroids of lines, areas and volumes, moment of inertia first moment of inertia, second moment of inertia and product moment of inertia, polar moment of inertia, radius of gyration, mass moment of inertia.

Unit IV - Kinematics and Kinetics of Particles

Unit V - Kinematics and Kinetics of Rigid bodies
Plane motion, Absolute motion, Relative motion, translating axes and rotating axes, work and energy, impulse and momentum

Text Books

Reference Books
Unit I – Basic Communication Theory

Importance of Communication – stages of communication, modes of communication – barriers to communication – strategies for effective communication – Listening: Importance, types, barriers – Developing effective listening skills.

Unit II – Comprehension And Analysis

Comprehension of technical and non-technical material – Skimming, scanning, inferring-Note making and extension of vocabulary, predicting and responding to context- Intensive Reading and Reviewing

Unit III – Writing

Effective sentences, cohesive writing, clarity and conciseness in writing – Introduction to Technical Writing – Better paragraphs, Definitions, Practice in Summary Writing – Four modes of writing – Use of dictionaries, indices, library references – making bibliographical entries with regard to sources from books, journals, internet etc.

Unit IV – Business Writing / Correspondence


Unit V – Oral Communication


Reference Books

P 104 PHYSICS LABORATORY

List of experiments (Any 10 Experiments)

1. Thermal conductivity – Lee’s DISC
2. Thermal conductivity - Radial flow
3. Spectrometer – Prism or Hollow prism
4. Spectrometer – Transmission grating
5. Spectrometer - Ordinary & Extraordinary rays
6. Newton’s rings
7. Air – wedge
8. Half shade polarimeter – Determination of specific rotatory power
9. Jolly’s experiment – determination of $\alpha$
10. Magnetism: i – h curve
11. Field along the axis of coil carrying current
12. Vibration magnetometer – calculation of magnetic moment & pole strength
13. Laser experiment: wavelength determination using transmission grating, reflection grating (vernier calipers) & particle size determination
14. Determination of optical absorption coefficient of materials using laser
15. Determination of numerical aperture of an optical fiber

P 105 CHEMISTRY LABORATORY

List of experiments (Any 10 Experiments)

1. Determination of dissolved oxygen in water.
2. Determination of total hardness of water by EDTA method.
3. Determination of carbonate and bicarbonate in water.
4. Estimation of chloride content in water.
5. Estimation of magnesium by EDTA.
7. Estimation of ferrous by permanganometry.
8. Estimation of ferrous and ferric iron in a solution mixture by dichrometry.
10. Estimation of copper in copper sulphate solution.
11. Estimation of calcium by permanganometry.
12. Estimation of iron by colorimetry.

Demonstration Experiments (Any two of the following)

1. Determination of COD of water sample.
2. Determination of lead by conductometry.
3. Percentage composition of sugar solution by viscometry.
<table>
<thead>
<tr>
<th>Sl.No.</th>
<th>Trade</th>
<th>List of Exercises</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Fitting</td>
<td>Study of tools and Machineries. Exercises on symmetric joints and joints with acute angle.</td>
</tr>
<tr>
<td>2.</td>
<td>Welding</td>
<td>Study of arc and gas welding equipment and tools – Edge preparation – Exercises on lap joint and V Butt joints – Demonstration of gas welding</td>
</tr>
<tr>
<td>3</td>
<td>Sheet metal work</td>
<td>Study of tools and Machineries – exercises on simple products like Office tray and waste collection tray.</td>
</tr>
<tr>
<td>4.</td>
<td>Carpentry</td>
<td>Study of tools and Machineries – Exercises on Lap joints and Mortise joints</td>
</tr>
</tbody>
</table>

List of Exercises

I Fitting
1. Study of tools and Machineries
2. Symmetric fitting
3. Acute angle fitting

II Welding
1. Study of arc and gas welding equipment and tools
2. Simple lap welding (Arc)
3. Single V butt welding (Arc)

III Sheet metal work
1. Study of tools and machineries
2. Funnel
3. Waste collection tray

IV Carpentry
1. Study of tools and machineries
2. Half lap joint
3. Corner mortise joint.
NCC/NSS training is compulsory for all Undergraduate students

1. The activities will include Practical/field activities/Extension lectures.
2. The activities shall be carried out outside class hours.
3. For the above activities, the student participation shall be for a minimum period of 45 hours.
4. The activities will be monitored by the respective faculty in charge and the First Year Coordinator.
5. Pass/Fail will be determined on the basis of participation, attendance, performance and behavior. If a candidate Fails, he/she has to repeat the course in the subsequent years.
6. Pass in this course is mandatory for the award of degree.
MA T31 MATHEMATICS – III

UNIT I

Laplace Transform: Definitions - Laplace transform of unit impulse and step functions - Laplace transform of periodic functions - Exponential shift formula- Initial and final value theorems - Laplace transform of derivatives and integrals - Convolution theorem - Inverse Laplace transform - Methods of determining inverse Laplace transform - Solution of linear differential equations using Laplace transforms. (12 Hours)

UNIT II

Function of a Complex Variable: Functions of a complex variable - continuity, derivative and analytic function - Cauchy - Riemann equations – Necessary and sufficient conditions for analyticity - Harmonic and orthogonal properties of real and imaginary parts - Conformal mapping - Bilinear transformations. (12 Hours)

UNIT III

Complex Integration: Cauchy’s theorem - Cauchy’s integral formula - Taylor’s and Laurent series - Residue theorem - Contour integration round the unit circle and semi-circular contour. (12 Hours)

UNIT IV

Fourier Series: Dirichlet’s conditions - Expansion of periodic functions into Fourier series- Change of interval- Half-range Fourier series. (10 Hours)

UNIT V

Complex form of Fourier series - Root mean square value - Parseval’s theorem on Fourier coefficients - Harmonic analysis.

Fourier Transform: Definition and properties - Fourier Integral theorem - statement - Fourier sine transform and cosine transforms - Inverse Fourier transform. (12 Hours)

TEXT BOOKS


REFERENCES

UNIT I

UNIT II

UNIT III
Large Signal Amplifiers: Amplifier types – Class A amplifier – Series fed and transformer coupled – Class B and Class AB amplifiers – Conversion efficiency – Amplifier distortion – Class C amplifier.

UNIT IV
Feedback Amplifiers: Feedback concept, general characteristics of negative feedback amplifiers, Types of feedback, comparison of parameters.
Oscillators: Barkhausen Criterion - Hartley, Colpitts and Wein bridge oscillators, crystal oscillator - Frequency stability.

UNIT V

TEXT BOOKS

REFERENCES
CS T33 ELECTRICAL ENGINEERING

UNIT I
Analysis of Electrical Circuits: Loop and mesh method of analysis Theorems - Thevenin’s and Norton’s theorem – superposition theorem - maximum power transfer theorem – Applications to DC and AC circuits.

UNIT II

UNIT III

UNIT IV
DC Machines: DC generator – construction - principle of operation - EMF equation – classification of DC generators - DC motors - Torque equation - commutation starters - Swinburne’s test - Losses and Efficiency of DC machines - Speed control applications of DC machines.

UNIT V

TEXT BOOKS

REFERENCES
CS T34 DIGITAL SYSTEM DESIGN

UNIT I
Number Systems and Boolean Algebra: Revision of RTL, DTL, I^2L, TTL, ECL, MOS, CMOS logic families - Binary number systems and conversion - Binary arithmetic-Binary codes - Boolean algebra - Basic operations - Basic Theorems - Boolean functions-Canonical forms - Simplification of Boolean functions-Karnaugh maps - Tabulation method.

UNIT II

UNIT III

UNIT IV
Memory and Programmable Logic: Random access memory – memory decoding - error detection and correction – Read only memory – Programmable Logic Array – Programmable Array Logic. Introduction to CPLDs, FPGAs


UNIT V
Introduction to VHDL (Very High Speed Integrated Circuit Hardware Description Language): Introduction – VHDL Design flow, program structure, types and constants, functions and procedures, libraries and packages – VHDL for combinational circuits, Sequential Circuits, Registers and Counters, VHDL description for binary multiplier.

TEXT BOOK

REFERENCES
CS T35 DATA STRUCTURES

UNIT I
Arrays: One dimensional array, multidimensional array, pointer arrays.
Searching: Linear search, Binary Search, Fibonacci search.

UNIT II
Stacks: Primitive operations, Application of stacks.
Queues: Primitive operations - Priority queues - De queues – Applications.

UNIT III
Trees: Binary tree, Terminology, Representation, Traversal, Types, Applications.
Graph: Terminology, Representation, Traversals – Applications - spanning trees, shortest path and Transitive closure, Topological sort.
Sets: Representation - Operations on sets – Applications.

UNIT IV
Sorting techniques: Internal sorting - Insertion Sort, Selection Sort, Shell Sort, Bubble Sort, Quick Sort, Heap Sort, Merge Sort, Radix Sort.
External sorting: External storage devices – Sorting with tapes and disks.

UNIT V
Files: queries - Sequential organization – Index techniques.
B Trees: B Tree indexing, operations on a B Tree, Lower and upper bounds of a B Tree - B + Tree Indexing – Trie Tree Indexing.

TEXT BOOKS

REFERENCES
CS T36 PRINCIPLES OF PROGRAMMING AND LANGUAGES

UNIT I

Implementation Issues: Introduction – Structured Coding techniques: single entry and single exit constructs, Efficiency consideration, Validation of single entry and single exit, Coding Style.

UNIT II
Introduction: Characteristics of programming Languages, Factors influencing the evolution of programming language, Development in programming methodologies, desirable features and design issues.

Programming Language processors: Structure and operations of translators, software simulated computer, syntax, semantics, structure, virtual computers, binding and binding time.

UNIT III
Data types: Properties of types and objects – elementary data types – structured data types.

Abstraction: Abstract data types – encapsulation by subprograms – type definition – storage management.

UNIT IV
Sequence Control: Implicit and explicit sequence control – sequencing with arithmetic and non-arithmetic expressions – sequence control between statements. Subprograms Control: Subprogram sequence control – attributes of data control – shared data in.

UNIT V
Object Oriented Programming: The class notion - Information hiding and data abstraction using classes, derived classes and inheritance, Polymorphism, Parameterized types.

Logic Programming: Formal logical systems – PROLOG.


TEXT BOOK

REFERENCES
LIST OF EXPERIMENTS

ELECTRICAL
1. OC and SC test on transformers
2. Load test on single phase transformers
3. Load test on 3-phase transformers
4. Power measurement through two wattmeter method
5. Load test on DC shunt motor and Speed control of DC shunt motor
6. Load test on single phase induction motor
7. RLC series resonance
8. Verification of theorems (Thevenin, Norton, super position, reciprocity)

ELECTRONICS
1. VI characteristics of Semiconductor and Zener diodes
2. Application of Diodes (clippers, clampers, rectifiers)
3. Static characteristics of common emitter transistor configuration and determination of h parameters.
4. Drain characteristics of FET and determination of Drain resistance, Mutual conductance and Amplification factor.
5. V.I. Characteristics of silicon controlled rectifier and Uni-Junction transistor.
7. Class B push – pull power amplifier and to find the efficiency as a function of load.
8. Applications of Operational amplifier
   a) Adder and subtractor
   b) Integrator and differentiator
   c) Wien’s bridge oscillator and R.C Phase shift.

CS P32 DIGITAL LABORATORY

I. Implementation of logic circuits using gates
1. Adders/Subtractors
2. Implementation of logic functions using universal gates only
3. Design of Priority Encoder
4. Design of Mux, Demultiplexer
5. Code Converters
6. Parity Generator and Checker

II. Implementation of circuits using MSI
1. Decimal Adder
2. Binary Multiplier
3. Design of Arithmetic unit
4. Synchronous Counters
5. Asynchronous Counters
6. Universal Shift Register

III. Interface experiments with MSI
1. Design of ALU
2. Interface of ALU with Memory

IV. Implementation of logic circuits using Very High Speed Integrated Circuit Hardware Description Language
2. Sequential Circuits – Counters, Shift Registers.
CS P33 DATA STRUCTURES LABORATORY

LIST OF EXPERIMENTS
1. Searching algorithms - sequential, binary and Fibonacci search algorithms on an ordered list (any two). Compare the number of key comparisons made during the searches
2. Sorting algorithms (any five): Insertion Sort, Selection Sort, Shell Sort, Bubble Sort, Quick Sort, Heap Sort, Merge Sort, and Radix Sort.
4. Evaluation of arithmetic expression.
5. Queue, circular queue, priority queue, Dequeue.
7. Tree traversal techniques.
8. The graph traversal techniques.
9. Dijkstra’s algorithm to obtain the shortest paths.
10. Use of hash tables.
11. B -Tree Indexing.
MA T41 DISCRETE MATHEMATICS AND GRAPH THEORY

UNIT I
Connectives, Statement formulae, Equivalence of Statement formulae, Functionally complete set of connectives - NAND and NOR connectives, implication, Principal conjunctive and disjunctive normal forms.

UNIT II
Inference calculus - Derivation process - Conditional proof - Indirect method of proof- Automatic theorem proving - Predicate calculus.

UNIT III
Partial ordering – Lattices – Properties - Lattices as algebraic system - sub lattices - Direct product and homomorphism - Special lattices - Complemented and Distributive lattices.

UNIT IV

UNIT V
Trees - properties of Trees - Pendant vertices in a Tree - Distance and Center in a Tree – rooted and binary trees - spanning trees - Fundamental Circuits - Distance between spanning trees shortest spanning trees - Kruskal algorithm.

TEXT BOOKS

REFERENCES
CS T42 MICROPROCESSORS AND MICROCONTROLLERS

UNIT I

UNIT II
Intel 8085 Interrupts and DMA: 8085 Interrupts – Software and Hardware Interrupts – 8259 Programmable Interrupt Controller - Data Transfer Techniques – Synchronous, Asynchronous and Direct Memory Access (DMA) and 8237 DMA Controller- 8253 Programmable Interval Timer.

UNIT III

UNIT IV

UNIT V

TEXT BOOKS

REFERENCE BOOKS
CS T43 AUTOMATA LANGUAGES AND COMPUTATION

UNIT I
Finite Automata and Regular Expressions: Formal Languages and Regular expressions, Deterministic and Non-Deterministic Finite Automata, Finite Automata with \( \varepsilon \)-moves, Equivalence of NFA and DFA, Minimization of finite automata, Two-way finite automata, Moore and Mealy machines, Applications of finite automata.

UNIT II

UNIT III
Pushdown Automata and Parsing Algorithms: Pushdown Automata and Context-Free Languages; Top-down parsing and Bottom-up parsing, Properties of CFL, Applications of Pumping Lemma, Closure properties of CFL and decision algorithms.

UNIT IV

UNIT V
Introduction to Computational Complexity: Time and Space complexity of TMs – Complexity classes – Introduction to NP-Hardness and NP-Completeness.

TEXT BOOK

REFERENCES
CS T44 DESIGN AND ANALYSIS OF ALGORITHMS

UNIT I
Algorithms: Definitions and notations: standard notations - asymptotic notations – worst case, best case and average case analysis; big oh, small oh, omega and theta notations; Recursive algorithms, analysis of non-recursive and recursive algorithms, solving recurrence equations, analyzing control structures.
Analysis of Sorting and Searching: Heap, shell, radix, insertion, selection and bubble sort; sequential, binary and Fibonacci search.

UNIT II

UNIT III
Basic Search and Traversal technique: Techniques for binary trees and graphs – AND/OR graphs – biconnected components – topological sorting.

UNIT IV

UNIT V

TEXTBOOK

REFERENCES
UNIT I
structures – functions – Classes – Objects.

UNIT II
Operator overloading – String Handling - Inheritance – Polymorphism – Manipulators - Templates
– Exception Handling – I/O Streams.

UNIT III
Introduction to JAVA – Features – Data Types –Classes, Objects and methods – Inheritance.
GUI Components – Swing Components – Adapter Handling - Event Handling – Layout Managers
– Graphics and Java2D - Packages - Files and Streams – Exception Handling.

UNIT IV
Multithreading – Applets - JDBC database programming – Introduction to Servlets – Network
Programming – RMI.

UNIT V
Byte code Interpretation - Customizing application - Data Structures - Collection classes.
Activation - Object serialization -Distributed garbage collection - JINI overview.

Note : UNIT I and UNIT II have to be dealt in C++ and remaining three units
are to be dealt in JAVA.

TEXT BOOKS
2. H.M. Deitel and P.J. Deitel, “Java™ How to Program”, Prentice-Hall of India, Seventh

REFERENCES
2006.
3. Bjarne Stroustrup, “The C++ Programming Language”, Addison-Wesley, Third and
UNIT I

UNIT II
Micro programmed Control: Control Memory-Address sequencing- Micro program Example – Design of control unit.
Computer Arithmetic: Addition, Subtraction, Multiplication, Division algorithms- Floating point arithmetic operations- Decimal arithmetic operations.

UNIT III
Memory Organization: Memory hierarchy – main memory – auxiliary memory –Associate memory – Cache memory – Virtual memory.

UNIT IV

UNIT V

TEXT BOOKS

REFERENCES
Experiment Using 8085 Microprocessor

1. Study of 8085 Microprocessor Trainer Kit
2. 8-bit Arithmetic Operations
   (Addition, Subtraction, Multiplication and Division)
3. Block Operations
   (Move, Exchange, Compare, Insert and Delete)
4. Code Conversions
5. Digital Clock simulation
6. Moving Display
7. Printer interfacing
8. Serial Communication
9. Interrupt Programming
10. Elevator Simulation
11. Traffic Light Control

Experiments Using 8086 Microprocessor with MASM

12. Arithmetic Operations
13. Sorting and Searching

Experiments Using 8051 Microcontroller

15. Arithmetic operations
16. ADC & DAC Interfacing
17. Stepper Motor and DC Motor Interface
CS P42 DESIGN AND ANALYSIS OF ALGORITHMS LABORATORY

LIST OF EXPERIMENTS

1. Implementation of sorting algorithms with analysis of time and space complexity.
2. Implementation of searching algorithms with analysis of time and space complexity
5. Solving problems using Dynamic Programming technique.
6. Implementation of Traversal techniques.
8. Implementation of Branch-and-Bound technique.

CS P43 OBJECT ORIENTED PROGRAMMING LANGUAGES LABORATORY

Cycle 1: Experiments to be implemented in C++
1. Classes, objects and namespaces
2. Constructors & destructors
3. Operator overloading
4. Inheritance
5. Polymorphism & Virtual functions,
6. Exception handling
7. Templates
8. I/O streams

Cycle 2: Experiments to be implemented in JAVA
9. Inheritance
10. Package and Interfaces
11. Exception Handling
12. Collections
13. Multithreaded Programming
14. Files and Sockets
15. AWT and Applets
16. Swing
17. Event Handling
18. RMI
Physical Education is compulsory for all the Undergraduate students
1. The activities will include games and sports / extension lectures.
2. Two Hrs. / Week will be allocated for physical education in the third and fourth semesters. Minimum of 75% attendance is mandatory.
3. These activities will be monitored by the Director of Physical Education.
4. Pass /Fail will be determined on the basis of participation, attendance, and performance. If a candidate Fails, he/she has to repeat the course in the subsequent years.
5. Pass in this course is mandatory for the award of degree.
CS T51 OPERATING SYSTEMS

UNIT I

UNIT II

UNIT III

UNIT IV

UNIT V

TEXT BOOKS

REFERENCES
CS T52 LANGUAGE TRANSLATORS

UNIT I

UNIT II

UNIT III

UNIT IV

UNIT V

TEXT BOOKS

REFERENCES
CS T53 COMPUTER NETWORKS

UNIT I


UNIT II


UNIT III


UNIT IV


UNIT V


TEXT BOOK


REFERENCES

CS T54 PLATFORM TECHNOLOGY

UNIT I

UNIT II

UNIT III

UNIT IV

UNIT V

TEXT BOOKS
CS T64 GRAPHICS AND IMAGE PROCESSING

UNIT I

UNIT II
Windowing And Clipping: Point, Lines, Polygons - boundary intersection methods

UNIT III

UNIT IV

UNITV

TEXTBOOK

REFERENCES
UNIT I
**Introduction to Embedded System:** Components of Embedded System – Classification - Characteristic of embedded system- Microprocessors & Micro controllers- Introduction to embedded processors - Embedded software architectures: Simple control loop - Interrupt controlled system - Cooperative multitasking - Preemptive multitasking or multi-threading - Micro kernels and exokernels - Monolithic kernels - Exotic custom operating systems.

UNIT II
**Embedded Hardware Architecture – 32 Bit Microcontrollers:** ARM 2 TDMI core based 32 Bit microcontrollers and family of processors, Register, Memory and Data transfer, Arithmetic and Logic instructions, Assembly Language, I/O operations interrupt structure, ARM cache. ARM Bus, Embedded systems with ARM. **Networks for Embedded systems:** Serial bus protocols: The CAN bus, and the USB bus, Parallel bus protocols: The PCI Bus and GPIB bus,

UNIT III

UNIT IV

UNIT V
**Study of Micro C/OS-II or Vx Works:** RTOS System Level Functions – Task Service Functions – Time Delay Functions – Memory Allocation Related Functions – Semaphore Related Functions – Mailbox Related Functions – Queue Related Functions – Case Studies of Programming with RTOS.

**TEXT BOOKS**

**REFERENCES**
LIST OF EXPERIMENTS

1. Implementation of a socket program for Echo/Ping/Talk commands.
2. Creation of a socket (TCP) between two computers and enable file transfer between them.
3. Implementation of a program for Remote Command Execution (Two M/Cs may be used).
4. Implementation of a program for CRC and Hamming code for error handling.
5. Writing a code for simulating Sliding Window Protocols.
6. Create a socket for HTTP for web page upload & Download.
7. Write a program for TCP module Implementation.(TCP services).
8. Write a program for File Transfer in client-server architecture using following methods:
   a) TCP/IP
   b) UDP
9. Write a program to implement RMI (Remote Method Invocation).
10. Implementation (using ns2/Glomosim) and Performance evaluation of the following routing protocols:
    a) Shortest path routing
    b) Flooding
    c) Link State
    d) Hierarchical
11. Broadcast/Multicast routing.
12. Implementation of ARP.
13. Study of IEEE 802.3 protocol.
14. Throughput comparison between 802.3 and 802.11.
15. Study of Key distribution and Certification schemes.
CS P52 PLATFORM TECHNOLOGY LABORATORY

Programs using C#.NET
1. Classes and Objects, Inheritance, Polymorphism
2. Interfaces, Operator Overloading, Delegates and Events
3. Exception Handling, Multi-Threading
4. Ado.NET

Program using VB .NET
5. Console & Windows Forms
6. Layout Managers & Containers
7. SDI & MDI
8. Database Controls

Application any one of the following or similar application using .NET framework
- Inventory Control
- Retail Shop Management
- Employee Information System
- Personal Assistant Program
- Students’ Information System
- Ticket Reservation System
- Hotel Management System
- Hospital Management System

CS P53 OPERATING SYSTEMS LABORATORY

LIST OF EXPERIMENTS
10. Study of basic UNIX/Linux commands.
12. Programs using the following system calls of UNIX/Linux operating system:
   fork, exec, getpid, exit, wait, close, stat, opendir, readdir.
13. Programs using the I/O system calls of UNIX operating system:
   open, read, write, etc).
14. Simulations of UNIX/Linux commands like ls, grep, etc.
15. Simulation of processes scheduling algorithms.
17. Simulation of basic memory management schemes.
18. Simulation of virtual memory management schemes.
19. Simulation of disk scheduling algorithms
20. Simulation of file systems.
21. Develop an application using any RTOS.
HS P54 GENERAL PROFICIENCY - I

UNIT I

UNIT II

UNIT III

UNIT IV

UNIT V
Aptitude: Verbal and Numerical Aptitude.

REFERENCES
CS T61 DATABASE MANAGEMENT SYSTEMS

UNIT I
Relational Databases: Relational Model – SQL – Advanced SQL – Other Relational Languages.

UNIT II

UNIT III

UNIT IV
Transaction Management: Transactions – Concurrency Control – Recovery System.

UNIT V
(Only the concepts that are covered in UNITs I to IV).

TEXT BOOK

   Note: Chapters 2-8, 11 - 17, 26 - 29 (Only the portions that are relevant to the concepts covered in chapters 2 - 8 and 11 - 17) and Appendix C

REFERENCES
CS T62 SOFTWARE ENGINEERING

UNIT I
Introduction - Socio-technical Systems – Emergent System properties – systems engineering –
organizations, people and computer systems – legacy systems – Software Processes – process
models, iteration and activities – Rational Unified Process – CASE - Project Management-
activities – planning – scheduling – risk management.

UNIT II
software requirements document - RE Processes - feasibility studies – elicitation – analysis –
validation – management of requirements - Systems Models - context – behaviour – data – object
reference architecture.

UNIT III
Distributed Systems Architecture - Multi processor - Client Server - Distributed Object - Inter-
Organizational Distributed Computing - Application Architectures – data – transaction – event –
language processing systems - Object-oriented Design-Objects and object classes- An Object-
Analysis- User Interface Prototyping- Interface Evaluation.

UNIT IV
Agile Methods – Extreme Programming – Rapid Application development – Software Prototyping
- Software Reuse – The Reuse Landscape – Design Patterns – Generator-Based Reuse –
Application Frameworks – Application System Reuse - Software Evolution – Program Evolution
Dynamics – Software Maintenance – Evolution Processes – Legacy system evolution - Planning
Verification and Validation – Software Inspections – Automated Static analysis – Verification and
Test automation.

UNIT V
Project Duration and Staffing - Process and Product Quality – Quality Assurance and Standards –
Planning – Control – Software Measurement and Metrics - Process Improvement – Process
Classification –Measurement –Analysis and Modeling –Change – The CMMI process
improvement Framework - Configuration Management. -Planning – Change Management –
Version and Release Management – System Building – CASE tools for configuration
management.

TEXT BOOK

REFERENCE BOOKS
   2008.
UNIT I
Internet Principles and Components: History of the Internet and World Wide Web - HTML - protocols – HTTP, SMTP, POP3, MIME, IMAP. Domain Name Server, Web Browsers and Web Servers, Dynamic HTML.

UNIT II

UNIT III
XML and ActiveX: Anatomy of xml document - XML markup-working with elements and attributes - creating valid documents-xml objects and DOM. ActiveX controls: OLE and ActiveX -ActiveX Documents, Server side Active-X Components, ActiveX DLL and ActiveX Exe.

UNIT IV

UNIT V

TEXT BOOKS

REFERENCES
CS T64 WIRELESS COMMUNICATION AND NETWORKS

UNIT I

UNIT II

UNIT III

UNIT IV

UNIT V

TEXT BOOK

REFERENCES
CS P61 DATABASE MANAGEMENT SYSTEMS LABORATORY

Experiments are to be carried out in DB2 / ORACLE and VB/ Open source DBMS package with the required front end software


2. Study of SQL: Primitive Data Types – User Defined data Types – Built-in Functions – Parts of Speech of create, alter, drop, select, insert, delete, update, commit, rollback, save point, grant, revoke.


5. Application: Design and develop any two of the following:
   - Library Information System
   - Logistics Management System
   - Students’ Information System
   - Ticket Reservation System
   - Hotel Management System
   - Hospital Management System
   - Inventory Control
   - Retail Shop Management
   - Employee Information System
   - Payroll System
   - Any other Similar System

   Clearly mention the scope of the system. Use standard tools for expressing the design of the systems.
CS P61 WEB TECHNOLOGY LABORATORY

LIST OF EXPERIMENTS
1. Creation of HTML Files
2. Working with Client Side Scripting
   2.1 VBScript
   2.2 JavaScript
3. Configuration of web servers
   3.1 Apache Web Server
   3.2 Internet Information Server (IIS)
4. Working with ActiveX Controls in web documents.
5. Experiments in Java Server Pages
   5.1 Implementing MVC Architecture using Servlets
   5.2 Data Access Programming (using ADO)
   5.3 Session and Application objects
   5.4 File System Management
6. Working with other Server Side Scripting
   6.1 Active Server Pages
   6.2 Java Servlets
   6.3 PHP
7. Experiments in Ajax Programming
8. Developing Web Services
9. Developing any E-commerce application (Mini Project)

CS P61 Mini Project using CASE Tools

The following documents for the Mini Project are to be prepared. Implementation is to be done by adopting software engineering methodology. For preparing documents and implementation the CASE tools are to be used wherever applicable. Use any open source CASE tool. Many of them are available at www.sourceforge.net. Other CASE tool, as per choice can also be used. Object oriented design approach is to be adopted. After implementation a report is to be prepared and submitted.

1. **Project Planning**: Thorough study of the problem, Identification project scope, objectives, Infrastructure and cost estimation

2. **Software requirement Analysis**: **Feasibility study** - Documentation of all the requirements as specified by customer in convention **Software Requirement Specification**-

3. **Design and Development**: Preparation of use case, collaboration or sequence, class, object, package, deployment diagrams and coding of the project.

4. **Software Testing**: Prepare test plan, perform validation testing, Coverage analysis, memory leaks develop test case hierarchy and Site check and Site monitor.
HS P64 GENERAL PROFICIENCY – II

UNIT I

UNIT II
Writing: Job Application Letter Writing – Resume Writing.

UNIT III

UNIT IV
Adapting To Corporate Life: Corporate Etiquette – Grooming and Dressing.

UNIT V
Aptitude: Verbal and numerical aptitude.

REFERENCES
CS T71 ARTIFICIAL INTELLIGENCE

UNIT I

UNIT II
Knowledge Representation: Approaches and issues in knowledge representation- Knowledge-Based Agent- Propositional Logic – Predicate logic – Unification – Resolution - Weak slot - filler structure – Strong slot - filler structure.

UNIT III

UNIT IV
Planning and Learning: Planning with state space search - conditional planning-continuous planning - Multi-Agent planning. Forms of learning - inductive learning - Reinforcement Learning - learning decision trees - Neural Net learning and Genetic learning

UNIT V
Swarm Intelligent Systems – Ant Colony System, Development, Application and Working of Ant Colony System.

TEXT BOOKS

REFERENCES
CS T72 COMPUTER HARDWARE AND TROUBLESHOOTING

UNIT I


UNIT II


UNIT III


UNIT IV


UNIT V


TEXT BOOKS


REFERENCES

CS T73 DISTRIBUTED COMPUTING

UNIT I

UNIT II

UNIT III

UNIT IV

UNIT V
Distributed File Systems – Distributed web based systems – Distributed object based systems.

TEXT BOOK

REFERENCES
LIST OF EXPERIMENTS

1. Assembling of a Personal Computer:
   a. Identifying parts of mother board, power connections and locating other connectors.
   b. Interconnection of disk drive units, keyboard, mouse and monitor.

2. Hard disk partitioning and OS installation:
   a. Partitioning the hard disk using FDISK/Partition Magic/Disk Manager
   b. Installation of Windows 98/XP/2000
   c. Installation of Linux kernel (possibly with dual boot option).

3. Study of In-Circuit Emulator:
   a. The target processor could be 8085/8088/8031 depending on the availability.
   b. Learn the different commands and their usages.

4. Study of Logic Analyser:
   a. Standalone or PC based with multiple channels depending on availability.
   b. Capture important signals and perform timing/state analysis with a known processor environment.

5. Circuit Tracing: Using Multimeter and continuity test mode, to trace a given circuit board and draw the schematic.

6. Serial Communication: To establish serial communication (RS232C) between a pair of PCs. The program shall be developed using C/C++/MASM with functions provided by BIOS and DOS interrupt services.

7. Parallel port interfacing:
   a. To interface two PCs via ECP and perform file transfer using Direct Cable Connection feature of Windows OS
   b. To configure the 8255 ports of a given microprocessor trainer kit and interface with a printer.

8. Design of I/O interface: (With a microprocessor trainer kit)
   a. To design an output port to interface a given set of discrete LEDs/7-segment LEDs.
   b. To design an input port to interface a given set of switches.

9. Troubleshooting a given microprocessor trainer kit (with faults introduced) using Logic State/Timing analyzer and Multimeter.

10. Troubleshooting a given microprocessor trainer kit (with faults introduced) using In-Circuit Emulator, Multimeter, and CRO.

11. Simulation of a given circuit using PSPICE circuit simulator.

12. Design of IC tester: To test a given digital IC. (Either a PC’s parallel port or 8255 port of a microprocessor trainer kit may be used for interfacing)

13. Floppy Disk Drive Interfacing: To interface the control signals of a given FDD and test their functionality either using a PC or a microprocessor trainer kit. (Drive Select test, Motor enable test, Track seek test, Write protect test)

14. Networking PCs: Installing NICs, configuring IP addresses, and interconnection using switches and cables.

15. Load testing of SMPS: Testing the given SMPS of a PC using a multimeter.
Distributed Computing Experiments
1. Simple exercises to learn the concept of RMI, Servlets, CORBA, COM and DCOM.
2. Finding Simple and Compound interest using RMI.
3. RMI-based implementation of Airline Reservation system.
4. Servlet-based implementation of Airline Reservation system.
5. Implementation of Mail Server.

Intelligent Computing Experiments
The following problems are to be solved using PROLOG /LISP.
1. Water Jug Problem (Using DFS and BFS).
2. Two Player Game (Using Heuristic Function).
4. AO* Algorithm.
6. Develop any Rule based system for an application of your choice.
CS P73  SEMINAR

Each one of the students will be assigned a Seminar Topic in the current and frontier areas. The student has to conduct a detailed study/survey on the assigned topic and prepare a report. The student will make an oral presentation followed by a brief question and answer session. The Seminar (presentation and report) will be evaluated by an internal assessment committee for a total of 100 marks.

CS P74 PROJECT WORK (PHASE-I)

The objective of the project is to enable the students to work in groups of not more than four members in each group on a project involving analytical, experimental, design or combination of these in the area of Computer Science and Engineering. Each project shall have a guide. The student is required to do literature survey, formulate the problem and form a methodology of arriving at the solution of the problem. The evaluation is based on continuous internal assessment by an internal assessment committee for 100 marks.

CS P75 INDUSTRIAL VISITS /TRAINING

During the course of study from 3rd to 7th semester each student is expected to undertake a minimum of four industrial visits or undertake a minimum of two weeks of industry/field training. The students are expected to submit a report, which shall be evaluated by an internal assessment committee at the end of seventh semester for 100 marks.
UNIT I

UNIT II
Introduction – Elementary Economic Analysis – Interest Formulas and their Applications - Comparisons – Present Worth Method – Future Worth Method – Annual Equivalent Method – Rate of Return Method

UNIT III

UNIT IV
Nature and Importance of Management - Development of Management Thought - Ethical and Environmental Foundations - Decision Making - Organizing and Staffing - Planning and Strategic Management – Leadership - Communicating and Controlling Managing Information

UNIT V

TEXT BOOK

REFERENCES
UNIT I
The need for parallel computers - models of computation - analyzing algorithms - expressing algorithms.

UNIT II
Basic Communication Operations: One-to-all broadcast and all-to-one reduction – all-to-all broadcast reduction – all-reduce and prefix-sum operations – scatter and gather – all-to-all personalized communication – circular shift – improving the speed of some communication operations.

UNIT III
Analytical Modeling of Parallel Programs: Sources of overhead in parallel programs – performance metrics for parallel systems – scalability of parallel systems – minimum execution time and minimum cost-optimal execution time.
Programming using the Message-Passing Paradigm: principles of message-passing programming – the building blocks – MPI – topologies and embedding – overlapping communication with computation – collective communication and computation operations – groups and communicators.
Programming Shared Address Space Platforms: Thread basics – synchronization primitives in Pthreads – controlling thread and synchronization attributes – composite synchronization constructs – tips for designing asynchronous programs – OpenMP.

UNIT IV

UNIT V
Dynamic Programming: Overview.
TEXT BOOKS

REFERENCES
UNIT I

UNIT II

UNIT III

UNIT IV

UNIT V

TEXT BOOK

REFERENCES
CS P81 ADVANCED COMPUTING LABORATORY

Software to be used for the experiments: OpenMP, Matlab and ns2 and any programming language.

LIST OF EXPERIMENTS

1. Implementation of Dynamic Multicasting with Concurrency Control
3. Parallel implementation of Iterative Deepening A*.
4. Implementation of D* algorithm with spatial data structures.
5. Implementation of Deadlock Detection/Avoidance/Prevention in Distributed Systems.
6. Implementation of 2D transformation: Translation, Scaling, Rotation, Mirror Reflection and Shearing with a menu driven program.
7. Implementation of Real-Time Scheduling over the exiting Network/Distributed Systems
8. Implement various Image Compression Algorithms.
9. Performing operations on image using any Image Editing Software.
10. Implementation of VOIP.

CS P82 PROJECT WORK (PHASE II)

Project work phase II will be an extension of the project work started in the seventh semester. On completion of the work, a project report should be prepared and submitted to the department. The project work and the report will be evaluated by an internal assessment committee for 50 marks. The external university examination, which carries a total of 50 marks, will have report evaluation and viva voce examination conducted by a committee of one external examiner and one internal examiner appointed by the University.

CS P83 COMPREHENSIVE VIVA-VOCE

The student will be tested for his understanding of basic principles of the core Computer Science and Engineering subjects. The internal assessment for a total of 50 marks will be made by an internal assessment committee. The committee will conduct two written examinations of objective or short questions type from all the core subjects. The external university examination, which carries a total of 50 marks, will be a Viva Voce examination conducted by a committee of one external examiner and one internal examiner appointed by the University.
HS P84 PROFESSIONAL ETHICAL PRACTICE

The course should cover the following topics by way of Seminars, Expert Lectures and Assignments:

1. Engineering Ethics – Moral issues, Ethical theories and their uses
2. Engineering as Experimentation – Code of Ethics
3. Engineer’s responsibility for safety
4. Responsibilities and rights
5. Global issues of engineering ethics

REFERENCE
CS E61 OBJECT ORIENTED ANALYSIS AND DESIGN

UNIT I
Introduction: The system life cycle - Traditional life cycle models - The object-oriented approach - The Rational Unified Process (RUP) - The Unified Modeling Language (UML) - UML models - Introduction to the case study - Requirements for the Wheels case study system - Requirements engineering - Requirements elicitation - List of requirements for the Wheels system - Use cases - Use case diagram - Use case descriptions - Actors and actor descriptions - Use case relationships: communication association, include and extend - Boundary - Using the use case model in system development.

UNIT II
Objects and Classes: Basics – Object – classes - Relationships between classes - The class diagram - Stages in building a class diagram - Packages - Using the class diagram in system development.

UNIT III
Identifying functionality: Introduction - CRC cards and interaction diagrams - Identifying operations using the CRC card technique - Interaction diagrams - Specifying operations - Using the CRC cards and interaction diagrams in system development - State Diagrams - States and events - Constructing a state diagram - Using state diagrams in system development.

UNIT IV

UNIT V

TEXT BOOK

REFERENCES
UNIT I

UNIT II

UNIT III

UNIT IV

UNIT V

TEXT BOOK

REFERENCE
CS E63 E-BUSINESS

UNIT I

UNIT II

UNIT III

UNIT IV

UNIT V

TEXT BOOK

REFERENCES
2. Bruce C. Brown, “How to Use the Internet to Advertise, Promote and Market Your Business or Website with Little or No Money”, Atlantic Publishing Company, 2006.
CS E64 BIOINFORMATICS

UNIT I

UNIT II

UNIT III

UNIT IV

UNIT V

TEXT BOOK

REFERENCE
CS E65 INFORMATION THEORY AND CODING TECHNIQUES

UNIT I

UNIT II
Channel Capacity and Coding: Channel models, channel capacity, channel coding, information capacity theorem, random selection of codes. Error control coding: linear block codes and their properties, decoding of linear block code, perfect codes, haming codes, optimal linear codes and MDS codes.

UNIT III
Cyclic Codes: Polynomials, division algorithm for polynomials, a method for generating cyclic codes, matrix description of cyclic codes, burst error correction, fire codes, golay codes, CRC codes, circuit implementation of cyclic codes. BCH codes: minimal polynomials, generator polynomial for BCH codes, decoding of BCH codes, Reed-Solomon codes and nested codes.

UNIT IV
Convolution Codes: Tee codes and trellis codes, polynomial description of convolutional codes, distance notions for convolutional codes, generation function, matrix description of convolutional codes, viterbi decoding of convolutional codes, distance bounds for convolutional codes, turbo codes and turbo decoding.

UNIT V
Trellis Coded Modulation: Concept of coded modulation, mapping by set partitioning, Ungerboeck’s TCM design rules, TCM decoder, Performance evaluation for Additive White Gaussian Noise (AWGN) channel, TCM for fading channels.

TEXT BOOK

REFERENCES
UNIT I

UNIT II

UNIT III

UNIT IV

UNIT V

TEXT BOOKS

REFERENCES
UNIT I

UNIT II

UNIT III

UNIT IV

UNIT V

TEXT BOOKS

REFERENCES
CS E68 DATA MINING AND DATA WAREHOUSING

UNIT I
Data Preprocessing, Language, Architectures, Concept Description: Preprocessing, Cleaning, Integration, Transformation, Reduction, Discretization, Concept Hierarchy Generation, Data Mining Primitives, Query Language, Graphical User Interfaces, Architectures, Concept Description, Data Generalization, Characterizations, Class Comparisons, Descriptive Statistical Measures.

UNIT II

UNIT III
Classification and Prediction: Classification and Prediction, Issues, Decision Tree Induction, Bayesian Classification, Association Rule Based, Other Classification Methods, Prediction, Classifier Accuracy.

UNIT IV

UNIT V
Data Warehousing: Introduction, Data Warehouse, Multidimensional Data Model, Data Warehouse Architecture, Implementation - Data Warehousing to Data Mining -Data warehousing components-building a data warehouse – mapping the data warehouse to an architecture - data extraction - cleanup- transformation tools- metadata – OLAP - Patterns and models - Data visualization principles.

TEXT BOOKS

REFERENCES
UNIT I
DBLC: Information system- SDLC- DBLC- Database Administration- Database administration
Object-Based databases and XML: Object Based Databases – XML.

UNIT II
Data Mining and Information Retrieval: Data Analysis and Mining – Information Retrieval.

UNIT III

UNIT IV
Other Topics: Advanced Application Development – Advanced Data Types and New Applications – Advanced Transaction Processing.

UNIT V
(Only the concepts that are covered in UNITs I to IV)

TEXT BOOK

REFERENCES
CS E610 RESOURCE MANAGEMENT TECHNIQUES

UNIT I

UNIT II
Inventory control: introduction-models of inventory-operations- discount-purchase inventory model-shortest limitation-purchase model-EOQ model-determination of stock level.

UNIT III

UNIT IV

UNIT V

TEXT BOOK

REFERENCE
UNIT I
Iterative and Evolutionary: Definition – comparison - major activities.
Agile: Basic concepts - Major activities - available agile methods.
Story: Overview-estimated hours remaining.

UNIT II

UNIT III

UNIT IV

UNIT V

TEXT BOOK

REFERENCE
CS E612 JAVA SCRIPT

UNIT I
**Introduction:** Introduction to JavaScript - JavaScript Core Features – Overview. Core Language: Data Types and Variables - Operators, Expressions, and Statements - Functions.

UNIT II
**Core Language:** Objects - Array, Date, Math, and Type-Related Objects - Regular Expressions.

UNIT III
**Using JavaScript:** Controlling Windows and Frames - Handling Documents - Form Handling

UNIT IV
**Using JavaScript:** Dynamic Effects: Rollovers, Positioning, and Animation - Navigation and Site Visit Improvements - Browser and Capabilities Detection.

UNIT V
**Advanced Topics:** JavaScript and Embedded Object - Remote JavaScript - JavaScript and XML.

TEXT BOOK

REFERENCES
CS E71 SOFTWARE QUALITY ASSURANCE AND TESTING

UNIT I

UNIT II
Testing Strategies: White box testing techniques - Statement coverage – Branch Coverage - Condition coverage - Decision/Condition coverage - Multiple condition coverage - Dataflow coverage - Mutation testing - Automated code coverage analysis - Black box testing techniques - Boundary value analysis – Robustness testing - Equivalence partitioning - Syntax testing - Finite state testing.

UNIT III

UNIT IV

UNIT V

TEXT BOOKS

REFERENCES
CS E72 COMPONENT ENGINEERING

UNIT I

UNIT II

UNIT III

UNIT IV

UNIT V

TEXT BOOK

REFERENCES
CS E73 CLIENT SERVER COMPUTING

UNIT I
Client Server Operating System: Anatomy of server program - Server needs from OS - Server Scalability - Client Anatomy - Client need from OS - Client OS trends - Server OS trends.

UNIT II

UNIT III
SQL Database Server: Stored Procedure, Triggers and Rules - Database Connectivity Solutions - ODBC – Architecture – Components of ODBC.
Data Warehouse: Elements- Warehouse Hierarchies- Replication Vs Direct Access – Mechanics of Data Replication – Cleansing and Transforming the Raw Data - EIS/DSS.
Client Server Groupware: Groupware - Component of Groupware.

UNIT IV
Client Server Transaction Processing: ACID properties - Transaction Model - TP Monitor and Operating System - TP Monitor and Transaction Management - TP Monitor Client Server interaction types - Transactional RPCs, Queues and Conversations - TP lite or TP Heavy - TP lite Vs TP Heavy.

UNIT V
Client Server with Distributed Objects: Distributed Objects and Components - From Distributed Objects to Components - CORBA-Distributed objects CORBA style - Object Management Architecture - Intergalactic ORB - Object Services - Common Facilities - Business Objects - Next Generation - COM+ - Other Component bus - COM short history - COM 101 -OLE/DCOM.

TEXT BOOK

REFERENCES
CS E74 REAL-TIME COMPUTING AND COMMUNICATION

UNIT I

UNIT II

UNIT III

UNIT IV

UNIT V

TEXT BOOKS

REFERENCES
CS E75 SOFTWARE ARCHITECTURE

UNIT I


UNIT II


UNIT III


UNIT IV


UNIT V


TEXT BOOKS


REFERENCES

CS E76 HIGH SPEED NETWORKS

UNIT I


UNIT II


UNIT III


UNIT IV


UNIT V


TEXT BOOKS


REFERENCES

CS E77 NETWORK PROTOCOL

UNIT I

UNIT II
Presentation Layer Protocol: LPP.
Session Layer protocols: RPC, SDP, SIP.
Transport Layer protocols: TCP, UDP, RDP, and RUDP.

UNIT III

UNIT IV

UNIT V
Network Security Protocols: SSH, RADIUS, SSL, Kerberos, TLS, IPSec, Voice over IP.

TEXT BOOKS

REFERENCES
UNIT I

UNIT II

UNIT III

UNIT IV

UNIT V

TEXT BOOKS

REFERENCES
CS E79 PRINCIPLES OF COMMUNICATION

UNIT I

UNIT II

UNIT III

UNIT IV

UNIT V
Antennas (Qualitative Analysis): Basic antenna operation, Definition of antenna parameters - radiation pattern, radiation resistance, directive and power gain, directivity, beam width, polarization and bandwidth - UHF and microwave antenna types - Dipole antenna, horn and its types, parabolic reflector, micro strip antenna, Yagi Uda and array antenna.

TEXT BOOKS

REFERENCE
CS E710 SOFTWARE PROJECT MANAGEMENT

UNIT I
Introduction to software project management – Stepwise: an overview of project planning - project valuation.

UNIT II
Selection of appropriate project approach - software effort estimation - activity planning.

UNIT III
Risk management – resource allocation - monitoring and control.

UNIT IV
Managing contracts - managing people and organizing teams – software quality.

UNIT V

TEXT BOOK

REFERENCES
CSE E711 RADIO FREQUENCY IDENTIFICATION TECHNOLOGY

UNIT I
Basics: radio waves, EIRP, communication protocol.

UNIT II
Components of an RFID System: Smart labels, middleware, dipole antenna.
Bar Codes and RFID Tags: UPC-A, Code 39, numeric digit.

UNIT III
Applications: Express Pay, track and trace, Wal-Mart.
RFID in defense applications: Department of Defense, Military logistics, CAGE code.

UNIT IV
Pharmaceutical Industry: Supply Chain Management, bullwhip effect, Tesco.
Project: Application Software, Middleware, cross-docking.

UNIT V
Planning a Project: SKUDD, data element, application software.

TEXT BOOK

REFERENCES
UNIT I

UNIT II

UNIT III

UNIT IV

UNIT V

TEXT BOOK

REFERENCE
CS E81 INTELLIGENT INFORMATION RETRIEVAL

UNIT I

UNIT II

UNIT III

UNIT IV

UNIT V

TEXT BOOKS

REFERENCES
CS E82 SOFT COMPUTING

UNIT I
Introduction - Soft Computing Concept Explanation - Importance of Tolerance of Imprecision and Uncertainty - Biological and Artificial Neuron - Neural Networks - Adaline - Perceptron - Back Propagation Neural Networks - Feed forward Multilayer Networks.

UNIT II
Types of Neural Networks - Competitive Learning - Kohonen Maps - CPN - ART - Neocognitron Neural Networks - Neural Networks as Associative Memories: Hopfield and Bidirectional Associative Memory.

UNIT III

UNIT IV

UNIT V

TEXT BOOKS
UNIT I

UNIT II

UNIT III

UNIT IV

UNIT V

TEXTBOOKS

REFERENCES
CS E84 MOBILE COMPUTING

UNIT I

UNIT II

UNIT III

UNIT IV

UNIT V

TEXT BOOKS

REFERENCES
CS E85 GRID COMPUTING

UNIT I

UNIT II

UNIT III

UNIT IV
Application Integration - Grid-Enabling Network Services - Managing Grid Environments.

UNIT V

TEXTBOOK

REFERENCES
UNIT I

UNIT II

UNIT III

UNIT IV
Intelligent Software Agents: Interface Agents – Agent Communication Languages – Agent Knowledge Representation – Agent Adaptability – Belief Desire Intension – Mobile Agent Applications.

UNIT V

TEXT BOOKS

REFERENCES
CS E87 ORGANIZATIONAL BEHAVIOUR

UNIT I

UNIT II

UNIT III

UNIT IV
Organizational Change and Stress Management.

UNIT V
Case Studies and Current Issues in Organizational Behaviour.

TEXT BOOK

REFERENCES
CS E88 DIGITAL SYSTEM DESIGN USING VHDL

UNIT I
Introduction to HDLs: Difference between HDL and other software languages – Different HDLs in vogue. Overview of digital system design using HDL.

Basic VHDL Language Elements: Identifiers, Data objects, scalar and composite data types, Operators.


UNIT II
Data Flow Modeling with examples: Concurrent signal assignment statement, Concurrent versus sequential signal assignment, Delta delays, Multiple drivers, Conditional signal assignment statement, selected signal assignment statement, concurrent assertion statement.

Structural Modeling with examples: Component declaration, Component instantiation and examples, Direct instantiation of component.

UNIT III
Subprograms and Overloading: Functions and procedures with simple examples - subprogram overloading, Operator overloading.

Packages and Libraries: Package declaration, package body, design file, design libraries, order of analysis, implicit visibility, explicit visibility, library clause and use clause.

UNIT IV
Advanced Features: Entity statements, Generate statements, Attributes, Aggregate targets, ports and their behaviour.

Model Simulation: Simulation – Writing a Test Bench for a Half and a Full adder.

UNIT V
Hardware Modeling Examples: Modeling entity interfaces, Modeling simple elements, Different styles of modeling, Modeling regular structures, Modeling delays, Modeling conditional operations, Modeling a clock divider and a pulse counter.

TEXT BOOKS

REFERENCES
UNIT - I

UNIT II

UNIT-III

UNIT-IV

UNIT-V

TEXT BOOK
CS E810 REFACTORING TECHNIQUES

UNIT-I
Refactoring, a First Example: The Starting Point.-The First Step-Decomposing and Redistributing- Conditional Logic Vs on Price Code-Final Thoughts.
Principles in Refactoring: Defining Refactoring-need-problem-Design and Performance-evolution
Bad Smells in Code: Code requiring refactoring

UNIT-II
Toward a Catalog of Refactorings: Format - References- Maturity.
Composing Methods : Extract Method- Inline-query- Explaining Variable- Split-Remove Assignment -Media Object-Substitute
Moving Features Between Objects : Moving, Hiding, removing and introducing code

UNIT-III
Organizing Data :Data related refactoring
Simplifying Conditional Expressions. Refactoring required for conditional expression
Making Method Calls Simpler. Refactoring rules for methods of objects and classes

UNIT-IV
Dealing with Generalization. Refactoring rules for inheritance invloving super and subclasses,delegatation
Big Refactorings: Tease Apart Inheritance.-Convert Procedural Design to Objects-Separate Domain from Presentation-Extract Hierarchy.

UNIT-V
Refactoring, Reuse, and Reality: A Reality Check--reluctance - reality check-Resources and references-software reuse

TEXT BOOKS

REFERENCE