J.B. INSTITUTE OF ENGINEERING AND TECHNOLOGY (JBIET)
UGC AUTONOMOUS

Bhaskar Nagar, Moinabad, Hyderabad – 500075, Telangana, India

ACADEMIC REGULATIONS FOR B.TECH. REGULAR STUDENTS

WITH EFFECT FROM THE ACADEMIC YEAR 2016-17 (R-16)

1.0   Under-Graduate Degree Programme in Engineering & Technology (UGP in E&T)

1.1   JBIET offers a 4-year (8 semesters) **Bachelor of Technology** (B.Tech.) degree programme, under Choice Based Credit System (CBCS) with effect from the academic year 2016-17 in the following branches of Engineering:

Sl. No.	Branch
1	Civil Engineering
2	Electrical and Electronics Engineering
3	Mechanical Engineering
4	Electronics and Communication Engineering
5	Computer Science and Engineering
6	Information Technology
7	Electronics and Computer Engineering
8	Mining Engineering

2.0   Eligibility for Admission

2.1 Admission to the under graduate programme shall be made either on the basis of the merit rank obtained by the qualified candidate in entrance test conducted by the Telangana State Government (EAMCET) or on the basis of any other order of merit approved by the University, subject to reservations as prescribed by the government from time to time.

2.2   The medium of instructions for the entire under graduate programme in E&T will be **English** only.

3.0   B.Tech. Programme structure

3.1   A student after securing admission shall pursue the under graduate programme in B.Tech. in a minimum period of **four** academic years (8 semesters), and a maximum period of **eight** academic years (16 semesters) starting from the date of commencement of first year first semester, failing which student shall forfeit seat in B.Tech course.

Each semester is structured to provide 24 credits, totalling to 192 credits for the entire B.Tech. programme. Each student shall secure 192 credits (with CGPA $\geq$ 5) required for

the completion of the under graduate programme and award of the B.Tech. degree.

3.2 **UGC/ AICTE** specified definitions/ descriptions are adopted appropriately for various terms and abbreviations used in these academic regulations/ norms, which are listed below.

3.2.1 Semester scheme

Each under graduate programme is of 4 academic years (8 semesters) with the academic year being divided into two semesters of 22 weeks (≥ 90 instructional days) each, each semester having - '**Continuous Internal Evaluation (CIE)**' and '**Semester End Examination (SEE)**'. **Choice Based Credit System (CBCS)** and **Credit Based Semester System (CBSS)** as indicated by UGC and curriculum / course structure as suggested by AICTE are followed.

3.2.2 Credit courses

All subjects/ courses are to be registered by the student in a semester to earn credits which shall be assigned to each subject/ course in an L: T: P: C (lecture periods: tutorial periods: practical periods: credits) structure based on the following general pattern.

1. One credit for one hour/ week/ semester for theory/ lecture (L) courses.
2. One credit for two hours/ week/ semester for laboratory/ practical (P) courses or Tutorials (T).

Courses like Environmental Studies, Professional Ethics, Gender Sensitization lab are identified as **mandatory courses**. These courses **will not carry any credits**.

3.2.3 Subject Course Classification

All subjects/ courses offered for the under graduate programme in E&T (B.Tech. degree programmes) are broadly classified as follows. JBIET has followed almost all the guidelines issued by AICTE/UGC.

S. No.	Broad Course Classification	Course Group/ Category	Course Description
1	Foundation Courses (FnC)	BS – Basic Sciences	Includes mathematics, physics and chemistry subjects
2		ES - Engineering Sciences	Includes fundamental Engineering subjects
3		HS – Humanities and Social sciences	Includes subjects related to humanities, social sciences and management
4	Core Courses	PC – Professional Core	Includes core subjects related to the parent discipline/ department/ branch of Engineering.

5	(CoC)	Project Work	B.Tech. project or UG project or UG major project
6		Industrial training/ Mini- project	Industrial training/ Internship/ UG Mini-project/ Mini-project
7		Seminar	Seminar/ Colloquium based on core contents related to parent discipline/ department/ branch of Engineering.
8	Elective Courses (EℓC)	PE – Professional Electives	Includes elective subjects related to the parent discipline/ department/ branch of Engineering.
9		OE – Open Electives	Elective subjects which include interdisciplinary subjects or subjects in an area outside the parent discipline/ department/ branch of Engineering.
10	Mandatory Courses (MC)	-	Mandatory courses (non-credit)

4.0 Course registration

4.1 A 'faculty advisor or counsellor' shall be assigned to a group of 15 students, who will advise student about the under graduate programme, its course structure and curriculum, choice/option for subject s/ courses, based on their competence, progress, pre-requisites and interest.

4.2 The academic section of the college invites '**registration forms**' from students before the beginning of the semester through 'on-line registration', ensuring 'date and time stamping'. The on-line registration requests for any 'current semester' shall be **completed before the commencement of SEEs (Semester End Examinations) of the 'preceding semester'**.

4.3 A student can apply for **on-line** registration, **only after** obtaining the '**written approval**' from faculty advisor/counsellor, which should be submitted to the college academic section through the Head of the Department. A copy of it shall be retained with Head of the Department, faculty advisor/ counsellor and the student.

4.4 A student may be permit ted to register for the subjects/ courses of **choice** with a total of 24 credits per semester (minimum of 20 credits and maximum of 28 credit s per semester and

permitted deviation of ± 17%), based on **progress** and SGPA/ CGPA, and completion of the '**pre-requisites'** as indicated for various subjects/ courses, in the department course structure and syllabus contents. However, a **minimum** of 20 credits per semester must be registered to ensure the '**studentship**' in any semester.

4.5 Choice for 'additional subjects/ courses' to reach the maximum permissible limit of 28 credits (above the typical 24 credit norm) must be clearly indicated, which needs the specific approval and sig nature of the faculty advisor/ counsellor.

4.6 If the student submits ambiguous choices or multiple options or erroneous entries during **on-line** registration for the subject(s) / course(s) under a given/ specified course group/ category as listed in the course structure, only the first mentioned subject/ course in that category will be taken into consideration.

4.7 Subject/ course options exercised through **on-line** registration are fin al and **cannot** be changed or inter-changed; further, alternate choices also will not be considered. However, if the subject/ course that has already been listed for registration b y the Head of the Department in a semester could not be offered due to any unforeseen or unexpected reasons, then the student shall be allowed to have alternate choice either for a new subject (subject to offering of such a subject), or for another existing subject (subject to availability of seats). Such alternate arrangements will be made by the head of the department, with due notification and time-framed schedule, within the **first week** after the commencement of class-work for that semester.

4.8 Dropping of subjects/ courses may be permitted, only after obtaining prior approval from the faculty advisor/ counsellor (subject to retaining a minimum of 20 credits), '**within a period of 15 days**' from the beginning of the current semester.

4.9 **Open electives**: The students have to choose one open elective (OE -I) in III year I semester, one (OE-II) in III year II semester, and one (OE-III) in IV year II semester, from the list of open electives given. However, the student cannot opt for an open elective subject offered b y their own (parent) department, if it is already listed under any category of the subjects offered by parent department in any semester.

4.10 **Professional electives**: students have to choose professional elective (P E-I) in III year II semester, Professional electives II, III, and IV (PE-II, III and IV) in IV year I semester, Professional electives V, and VI (PE-V and VI) in IV year II semester, from the list of professional electives given. However, the students may opt for professional elective subjects offered in the related area.

1. **Subjects/ courses to be offered**

2. A typical section (or class) strength for each semester shall be 60.

3. A subject/ course may be offered to the students, **only if** a minimum of 20 students (1/3 of the section strength) opt for it. The maximum strength of a section is limited to 80 (60 + 1/3 of the section strength).

4. More than **one faculty member** may offer the **same subject** (lab/ practical may be included with the corresponding theory subject in the same semester) in any semester.

However, selection of choice for students will be based on - '**first com e first serve** basis and CGPA criterion' (i.e. the first focus shall be on early **on-line entry** from the student for registration in that semester, and the second focus, if needed, will bee on CGPA of the student).

5. If more entries for registration of a subject come into picture, then the Head of Department concerned shall decide, whether or not to offer such a subject/ course for **two (or multiple) sections**.

6.0   Attendance requirements:

6.1   A student shall be eligible to appear for the semester end examinations, if student acquires a minimum of 75% of attendance in aggregate of all the subjects/ courses (excluding attendance in mandatory courses Environmental Science, Professional Ethics, Gender Sensitization Lab, NCC/ NSO and NSS) for that semester.

6.2   Shortage of attendance i n aggregate up to 10% (65% and above, and below 75%) in each semester may be condoned by the college academic committee on genuine and valid grounds, based on the student's representation with supporting evidence.

6.3   A stipulated fee shall be payable towards condoning of shortage of attendance.

6.4   Shortage of attendance below 65% in aggregate shall in **no** case be condoned.

6.5   **Students whose shortage of attendance is not condoned in any semester are not eligible to take their end examinations of that semester. They get detained and their registration for that semester shall stand cancelled. They will not b e promoted to the next semester.** They may seek re-registration for all those subjects registered in that semester in which student was detained, by seeking re-admission into th at semester as and when offered; in case if there are any professional electives and/ or open electives, the same may also be re-registered if offered. However, if those electives are not offered in later semesters, then alternate electives may be chosen from the **same** set of elective subjects offered under that category.

6.6   A student fulfilling the attendance requirement in the present semester shall not be eligible   for readmission into the same class.

7.0   Academic requirements

The following academic requirements have to be satisfied, in addition to the attendance requirements mentioned in item no.**6.**

7.1   A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject/ course, if student secures not less than 35 % marks (26 out of 75 marks) in the semester end examination, and a minimum of 40% of marks in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together; in terms of letter grades, this implies securing **'C'** grade or above in that subject/ course.

7.2 A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to UG mini-project and seminar, if student secures not less than 40% marks (i.e. 40 out of 100 allotted marks) in each of them. The student would be treated as failed, if student (i) does not submit a report on UG mini-project, or does not make a presentation of the same before the evaluation committee as per schedule, or (ii) does not present the seminar as required in the IV year I Semester, or (iii) secures less than 40% marks in UG mini-project/ seminar evaluations.

Student may reappear once for each of the above evaluations, when they are scheduled again; if student fails in such 'one reappearance' evaluation also, student has to reappear for the same in the next subsequent semester, as and when it is scheduled.

7.3   Promotion Rules

S. No.	Promotion	Conditions to be fulfilled
1	First year first semester to first year second semester	Regular course of study of first year first semester.
2	First year second semester to second year first semester	i. Regular course of study of first year second semester. ii. Must have secured at least 24 credits out of 48 credits i.e., 50% of credits up to first year second semester from all the relevant regular and supplementary examinations, whether the student takes those examinations or not.
3	Second year first semester to second year second semester	Regular course of study of second year first semester.
4	Second year second semester to third year first semester	i. Regular course of study of second year second semester. ii. Must have secured at least 58 credits out of 96 credits i.e., 60% of credits up to second year second semester from all the relevant regular and supplementary examinations, whether the student takes those examinations or not.
5	Third year first semester to third year second semester	Regular course of study of third year first semester.
6	Third year second semester to fourth year first semester	i. Regular course of study of third year second semester. ii. Must have secured at least 86 credits out of 144 credits i.e., 60% of credits up to third year second semester from all the relevant regular and supplementary examinations, whether

			the student takes those examinations or not.
7		Fourth year first semester to fourth year second semester	Regular course of study of fourth year first semester.

7.4 A student shall register for all subjects covering 192 credits as specified and listed in the course structure, fulfils all the attendance and academic requirements for 192 credits, 'earn all 192 credits' by securing SGPA $\geq$ 5.0 (in each semester) and CGPA (at the end of each successive semester) $\geq$ 5.0 to successfully complete the under graduate programme.

7.5 After securing the necessary 192 credits as specified for the successful completion of the entire under graduate programme, the student can avail exemption of two subjects up to 6 credits, that is, one open elective and one professional elective subject or two professional elective subjects for optional drop out from these 192 credits earned; resulting in 186 credits for under graduate programme performance evaluation, i.e., the performance of the student in these 186 credits shall alone be taken into account for the calculation of 'the final CGPA (at the e nd of under graduate programme, which takes the SGPA of the IV year II semester into account)' , and shall be indicated in the grade card of IV year II semester. However, the performance of student in the earlier individual semesters, with the corresponding SGPA and CGPA for which grade cards have already been given will not be altered.

7.6 If a student registers for some more '**extra subjects'** (in the parent department or other **departments**/branches of Engineering.) other than those listed subjects totalling to 192 credits as specified in the course structure of his department, the performances in those '**extra subjects**' (although evaluated and graded using the same procedure as that of the required 192 credits) will not be taken into account while calculating the SGPA and CGPA. For such '**extra subjects'** registered, % of marks and letter grade alone will be indicated in the grade card as a performance measure, subject to completion of the attendance and academic requirements as stated in regulations 6 and 7.1 – 7.5 above.

7.7 A student eligible to appear in the end semester examination for any subject/ course, but absent from it or failed (thereby failing to secure **'C'** grade or above) may reappear for that subject/ course in the supplementary examination as and when conducted. In such cases, CIE assessed earlier for that subject/ course will be carried over, and added to the marks to be obtained in the SEE supplementary examination for evaluating performance in that subject.

7.8 A student **detained in a semester due to shortage of attendance, may be re-admitted when the same semester is offered in the next academic year for fulfilment of academic requirement s**. The academic regulations under which student has been readmitted shall be applicable. However, no grade allotments or SGPA/ CGPA calculations will be done for the entire semester in which student has been detained.

7.9 A student detained **due t o lack of credits, shall be promoted to the next academic year only after acquiring the required academic credits.** The academic regulations under which student has been readmitted shall be applicable to him.

8.0   Evaluation - Distribution and Weightage of marks

8.1   The performance of a student in every subject/course (including practicals and UG major project)

will be evaluated for 100 marks each, with 25 marks allotted for CIE (Continuous Internal Evaluation) and 75 marks for SEE (Semester End-Examination).

8.2 For theory subjects, during a semester, there shall be two mid-term examinations. Each mid-term examination consists of one objective paper, one descriptive paper and one assignment. The objective paper and the essay paper shall be for 10 m arks each with a total duration of 1 hour 20 minutes (20 minutes for objective and 60 minutes for essay paper). The objective paper is set with 20 bits of multiple choice, fill-in the blanks and matching type of questions for a total of 10 marks. The essay paper shall contain 4 full questions out of which, the student has to answer 2 questions, each carrying 5 marks. While the first mid-term examination shall be conducted on 50% of the syllabus, the second mid-term examination shall be conducted on the remaining 50% of the syllabus. Five marks are allocated for assignments (as specified by the subject teacher concerned). The first assignment should be submitted before the conduct of the first mid-examination, and the second assignment should be submitted before the conduct of the second mid-examination. The total m arks secured by the student in each mid-term examination are evaluated for 25 marks, and the average of the two mid-term examinations shall be taken as the final marks secured by each student in internals/sessionals. If any student is absent from any subject of a mi d-term examination, an on-line test will be conducted for him by the university. The details of the question paper pattern are as follows,

- The end semester examinations will be conducted for 75 marks consisting of two parts viz. i) **Part- A** for 25 marks, ii) **Part - B** for 50 marks.

- Part-A is compulsory question which consists of ten sub-questions. The first five sub-questions are from each unit and carry 2 marks each. The next five sub-questions are one from each unit and carry 3 marks each.
- Part-B consists of five questions (numbered from 2 to 6) carrying 10 marks each.

  Each of these questions is from one unit and may contain sub-questions. For each question there will be an "either" "or" choice, which means that there will be two questions from each unit and the student should answer either of the two questions.

8.3 For practical subjects there shall be a continuous internal evaluation during the semester for 25 sessional marks and 75 semester end examination marks. Out of the 25 marks for internal evaluation, day-to-day work in the laboratory shall be evaluated for 15 marks and internal practical examination shall be evaluated for 10 marks conducted by the laboratory teacher concerned. The semester end examination shall be conducted with an external examiner and th e laboratory teacher. The external examiner s hall be appointed from the clusters of colleges which are decided by the examination branch of the university

8.4 For the subject having de sign and/or drawing, (such as engineering graphics, engineering drawing, machine drawing) and estimation, the distribution shall b e 25 marks for continuous internal evaluation (15 marks for day-to-day work and 10 m arks for internal tests) and 75 marks for semester end examination. There shall be two internal tests in a semester and the average of the two shall be considered for the award of marks for internal tests.

8.5 There shall be an UG mini-project, in collaboration with an industry of their specialization. Students will register for this immediately after III year II semester examinations and

pursue it during summer vacation. The UG mini -project shall be submitted in a report form and presented before the committee in IV year I semester. It shall be evaluated for 100 marks. The committee consists of an external examiner, Head of the Department, supervisor of the UG mini-project and a senior faculty member of the department. There shall b e no internal marks for UG mini-project

8.6 There shall be a seminar presentation in IV year I semester. For the seminar, the student shall collect the information on a specialized topic, prepare a technical report and submit it to the department. It s hall be evaluated by the departmental committee consisting of Head of the Department, seminar supervisor and a senior faculty member. The seminar report shall be evaluated for 100 marks. There shall be no semester end examination for the seminar.

8.7 Out of a total of 100 m arks for the UG major project, 25 marks shall be allotted for internal evaluation and 75 marks for the end semester examination (viva voce). The end semester examination of the UG major project shall be conducted by the same committee as appointed for the UG mini-project. In addition, the UG major project supervisor shall also be included in the committee. The topics for UG mini project, seminar and UG major project shall be different from one another. The evaluation of U G major project shall be made at the end of IV year II semester. The internal evaluation shall be on the basis of two seminars given by each student on the topic of UG major project.

8.8 The laboratory marks and the sessional marks awarded by the college are subject to scrutiny and scaling by the university wherever necessary. In such cases, the sessional and laboratory marks awarded by the college will be referred to a committee. The committee will arrive at a scaling factor and the marks will be scaled accordingly. The recommendations of the committee are final and binding. The laboratory records and internal test papers shall be preserved in the respective institutions as per the university rules and produced before the committees of the university as and when asked for.

8.9 For mandatory courses viz. environmental studies, professional ethics and gender sensitization lab, a student has to secure 40 marks out of 100 marks (i.e. 40% of the marks allotted) in the continuous internal evaluation for passing the subject/course.

8.10 For mandatory courses NCC/ NSO and NSS, a '**satisfactory participation certificate**' shall be issued to the student from the authorities concerned, only after securing ≥ 65% attendance in such a course.

8.11 No marks or letter grade shall be allotted for all mandatory/non-credit courses.

9.0 Grading procedure

9.1 Marks will be awarded to indicate the performance of student in each theory subject, laboratory / practicals, seminar, UG mini project and UG major project. Based on the percentage of marks obtained (Continuous Internal Evaluation plus Semester End Examination, both taken together) as specified in item 8 above, a corresponding letter grade shall be given.

9.2 As a measure of the performance of student, a 10-point absolute grading system using the following letter grades (as per UGC/AICTE guidelines) and corresponding percentage of marks shall be followed:

% of Marks Secured in a Subject/Course (Class Intervals)	Letter Grade (UGC Guidelines)	Grade Points
Greater than or equal to 90%	O (Outstanding)	10
80 and less than 90%	A$^+$ (Excellent)	9
70 and less than 80%	A (Very Good)	8
60 and less than 70%	B$^+$ (Good)	7
50 and less than 60%	B (Average)	6
40 and less than 50%	C (Pass)	5
Below 40%	F (FAIL)	0
Absent	Ab	0

9.3 A student obtaining '**F'** grade in any subject shall be deemed to have '**failed'** and is required to reappear as a 'supplementary student' in the semester end examination, as and when offered. In such cases, internal marks in those subjects will remain the same as those obtained earlier.

9.4 A student who has not appeared for examination in any subject, '**Ab'** grade will be allocated in that subject, and student shall be considered '**failed'**. Student will be required to reappear as a 'supplementary student' in the semester end examination, as and when offered.

9.5 A letter grade does not indicate any specific percentage of marks secure d by the student, but it indicates only the range of percentage of marks.

9.6 A student earns grade point (GP) in each subject/ course, on the basis o f the letter grade secured in that subject/ course. The corresponding 'credit points' (CP) are computed by multiplying the grade point with credits for that particular subject/ course .

Credit points (C P) = grade point (GP) x credits …. For a course

9.7 The student passes the subject/ course only when **GP $\geq$ 5 ('C' grade or above)**

9.8 The semester grade point average (SGPA) is calculated by dividing the sum of credit points ($\sum$ CP) secured from all subjects/courses registered in a semester, by the total numbers of credits registered during that semester. SGPA is rounded off to **two** decimal places. SGPA is thus computed as

$$\textbf{SGPA} = \left\{ \sum_{i=1}^{N} C_i G_i \right\} \ / \ \left\{ \sum_{i=1}^{N} C_i \right\} \textbf{ ..... For each semester.}$$

Where 'i' is the subject indicator index (takes into account all subjects in a semester), 'N' is the no. of subjects **'registered'** for the semester (as specifically required and listed under the course structure of the parent department). G_i is the no. of credits allotted to the ith subject, and G_i represents the grade points (GP) corresponding to the letter grade awarded for that ith subject.

9.9   The cumulative grade point average (CGPA) is a measure of the overall cumulative performance4 of a student in all semesters considered for registration. The CGPA is the ratio of the total credit points secured by a student in all registered courses in all semesters, and the total number of credits registered in all the semesters. CGPA is rounded off to two decimal places. CGPA is thus computed from the I year II semester onwards at the end of each semester as per the formula

$$\text{CGPA} = \left\{ \sum_{j=1}^{M} C_j G_j \right\} \;/\; \left\{ \sum_{j=1}^{N} C_j \right\} \; \ldots \ldots \textbf{For all S semester registered}$$

(i.e., up to and inclusive of S semester, S ≥ 2),

Where '**M**' is the total no. of subjects (as specifically required and listed under the course structure of the parent department) the student has **'registered'** i.e., from the 1st semester onwards up to and inclusive of the 8th semester, **'j'** is the subject indicator index (takes Into account all subjects for 1 to 8 semesters), C_j is the no. of credits allotted to the jth subject, and G_j represents the grade points (GP) corresponding to the letter grade awarded for the jth subject. After registration and completion of first year first semester, the SGPA of that semester itself may be taken as the CGPA, as there are no cumulative effects.

Illustration of calculation of SGPA

Course/Subject	Credits	Letter Grade	Grade Points	Credit Points
Course 1	4	A	8	4 x 8 = 32
Course 2	4	O	10	4 x 10 = 40
Course 3	4	C	5	4 x 5 = 20
Course 4	3	B	6	3 x 6 = 18
Course 5	3	A+	9	3 x 9 = 27
Course 6	3	C	5	3 x 5 = 15
	21			152

SGPA = 152/21 = 7.24

Illustration of calculation of SGPA:

Course/Subject	Credits	Letter Grade	Grade Points	Credit Points
I Year I Semester				
Course 1	4	A	8	4 x 8 = 32
Course 2	4	A+	9	4 x 9= 36
Course 3	4	B	6	4 x 6 = 24
Course 4	3	O	10	3 x 10 = 30
Course 5	3	B+	7	3 x 7 = 21
Course 6	3	A	8	3 x 8 = 24
I Year II Semester				
Course 7	4	B+	7	4 x 7 = 28
Course 8	4	O	10	4 x 10= 40
Course 9	4	A	8	4 x 8 = 32
Course 10	3	B	16	3 x 6= 18
Course 11	3	C	5	3 x 5 = 15
Course 12	3	A+	9	3 x 9 = 27
	Total Credits= 42			Total Credit Points=327

CGPA = 327/42 = 7.79

9.10   For merit ranking or comparison purposes or any other listing, **only** the '**rounded off'** values of the CGPAs will be used.

9.11   For calculations listed in regulations 9.6 to 9.9, performance in failed subjects/ courses (securing **F** grade) will also be taken into account, and the credits of such subjects/ courses will also be included in the multiplications and summations. After passing the failed subject(s) newly secured letter grades will be taken into account for calculation of SGPA and CGPA. However, mandatory courses will not be taken into consideration.

10.0   **Passing standards**

10.1   A student shall be declared successful or 'passed' in a semester, if student secures a GP $\geq$ 5 ('C' grade or above) in every subject/course in that semester (i.e. when student gets an SGPA $\geq$ 5.00 at the en d of that particular semester); and a student s hall be declared successful or 'passed' in the entire under graduate programme, only when gets a CGPA $\geq$ 5.00 for the award of the degree as required.

10.2   After the completion of e ach semester, a grade card or grade sheet (or transcript) shall be issued to all the registered students of that semester, indicating the letter grades and credits earned. It will show the details of the courses registered (course code, title, no. of credits, and grade earned etc.), credits earned, SGPA, and CGPA.

11.0   **Declaration of results**
11.1   Computation of SGPA and CGPA are done using the procedure listed in 9.6 to 9.9.

11.2   For final percentage of marks equivalent to the computed final CGPA, the following formula may be used.

$$\text{\% of Marks = (final CGPA – 0.5) x 10}$$

12.0   **Award of degree**

12.1   A student who registers for all the specified subjects/ courses as listed in the course structure and secures the required number of 192 credits (with CGPA $\geq$ 5.0), within 8 academic years from the date of commencement of the first academic year, shall be declared to have '**qualified'** for the award of the B.Tech. degree in the chosen branch of Engineering as selected at the time of admission.

12.2   A student who qualifies for the award of the degree as listed in item 12.1 shall be placed in the following classes.

12.3   Students with final CGP A (at the end of the under graduate programme) $\geq$ 8.00, and fulfilling the following conditions -

   (ii) Should have passed all the subjects/courses in '**first appearance'** within the first 4 academic years (or 8 sequential semesters) from the date of commencement of first year first semester.

   (iii) Should have secured a CGPA $\geq$ 8.00, at the end of each of the 8 sequential semesters, starting from first year first semester onwards.

   (iv) Should not have been detained or prevented from writing t he end semester examinations in any semester due to shortage of attendance or any other reason, shall be placed in '**first class with distinction'**.

12.4   Students with final CGP A (at the end of the under graduate program me) ≥6.50 but < 8.00, shall be placed in '**first class'**.

12.5   Students with final CGP A (at the end of the under graduate program me) ≥ 5.50 but < 6.50, shall be placed in '**second class'**.

12.6   All other students who qualify for the award of the degree (as per item 12.1), with final CGPA (at the end of the under graduate programme) ≥ 5.00 but < 5.50, shall be placed in '**pass class**'.

12.7   A student with final CGP A (at the end of the under graduate programme) < 5.00 will not be eligible for the award of the degree.

12.8   Students fulfilling the conditions listed under item 12.3 alone will be eligible for award of '**First Rank**' and '**Gold Medal**'.

13.0   **Withholding of results**

13.1   If the student has not pa id the fees to the university/ college at any stage, or has dues pending due to any reason whatsoever, or if any case of indiscipline is pending, the result of the student may be withheld, and student will not be allowed to go into the next higher semester. The award or is sue of the degree may also be withheld in such cases.

14.0   **Transitory regulations**

14.1   A student who has discontinued for any reason, or has been detained for want of attendance or lack of required credits as specified, or who has failed after having
undergone the degree programme, may be considered eligible for re admission to the same subjects/ courses (or equivalent subjects/ courses, as the case may be), and same professional electives/ o pen electives (or from set/category of elective s or equivalents suggested, as the case m ay be) as and when they are offered (within the time-frame of 8 years from the date of commencement of student's first year first semester).

15.0   **Student transfers**

15.1   There shall be no branch transfers after the completion of admission process.

15.2   There shall be no transfers from the college/stream to another college.

16.0   **Scope**

16.1   The academic regulations should be read as a whole, for the purpose of any interpretation.

16.2   In case of any doubt or ambiguity in the interpretation of the above rules, the decision of the Head of the Institution is final.

16.3   The institution may change or amend the academic regulations, course structure or syllabi at any time if necessary, and the changes or amendments made shall be applicable to all students with effect from the date notified by the JBIET authorities.

J.B. INSTITUTE OF ENGINEERING AND TECHNOLOGY (JBIET)
UGC AUTONOMOUS

Bhaskar Nagar, Moinabad, Hyderabad – 500075, Telangana, India

Academic Regulations for B.Tech. (Lateral Entry Scheme) w.e.f the A Y 2017-18

1. **Eligibility for award of B. Tech. Degree (LES)**

The LES students after securing admission shall pursue a course of study for not less than three academic year s and not more than six academic years.

2. The student shall register for 144 credits and secure 144 credits with CGPA ≥ 5 from II year to IV year B.Tech. programme (LES) for the award of B.Tech. degree. **Out of the144 credits secured, the student can avail exemption up to 6 credits**, that is, one open elective subject and one professional elective subject or two professional elective subjects resulting in 138 credits for B.Tech programme performance evaluation**.**

3. The students, who fail to fulfil the requirement for the award of t he degree in six academic years from the year of admission, shall forfeit their seat in B.Tech.

4. The attendance requirements of B. Tech. (Regular) shall be applicable to B.Tech. (LES).

5. **Promotion Rule**

S. No	Promotion	Conditions to fulfilled
1	Second year first semester to second year second semester	Regular course of study of second year first semester.
2	Second year second semester to third year first semester	(i)Regular course of study of second year second semester. (ii) Must have secured at least 29 credits out of 48 credits i.e., 60% of credits up to second year second semester from all the relevant regular and supplementary examinations, whether the student takes those examinations or not.
3	Third year first semester to third year second semester	Regular course of study of third year first semester.
4	Third year second semester to fourth year first semester	(i)Regular course of study of third year second semester. (ii) Must have secured at least 58 credits out of 96 credits i.e., 60% of credits up to third year second semester from all the relevant regular and supplementary examinations, whether the student takes those examinations or not.
5	Fourth year first semester to fourth year second semester	Regular course of study of fourth year first semester.

6. **All the other regulations as applicable to B. Tech. 4-year degree course (Regular) will hold good for B. Tech. (Lateral Entry Scheme).**

MALPRACTICES RULES

DISCIPLINARY ACTIO N FOR / IMPROPER CONDUCT IN EXAMINATIONS

S.No.	Nature of Malpractice/Improper conduct	Punishment
	If the student:	
1.(a)	Possesses or keeps accessible in examination hall, any paper, note book, programmable calculators, cell phones, pager, palm computers or any other form of material concerned with or related to the subject of the examination (theory or practical) in which student is appearing but has not made use of (material shall include any marks on the body of the subject of the examination)	Expulsion from the examination hall and cancellation of the performance in that subject only.
(b)	Gives assistance or guidance or receives it from any other student orally or by any other body language methods or communicates through cell phones with any student or persons in or outside the exam hall in respect of any matter.	Expulsion from the examination hall and cancellation of the performance in the subject only of all the students involved. In case of an outsider, he will be handed over to the police and a case is registered against him.
2.	Has copied in the examination hall from any paper, book, programmable calculators, palm computers or any other form of material relevant to the subject of the examination (theory or practical) in which the student is appearing.	Expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the student has already appeared including practical examinations and UG major project and shall not be permitted to appear for the remaining examinations of the subjects of that semester/year. The hall ticket of the student is to be cancelled and sent to the university.
3.	Impersonates any other student in connection with the examination.	The student who has impersonated shall be expelled from examination hall. The student is also debarred and forfeits the seat. The performance of the original student, who has been impersonated, shall be cancelled in all the subjects of the examination (including practicals and UG major project) already appeared and shall not be allowed to appear for examinations of the remaining subjects of that semester/year. The student is also debarred for two consecutive semesters from class work and all university examinations. The continuation of the course by the student is subject to the academic regulations in connection with forfeiture of sea. If the imposter is and outsider, he will be handed over to the police and a case is registered against him.
		Expulsion from the examination hall and cancellation of performance in the subject

4.	Smuggles in the answer book or additional sheet or takes our or arranges to send out the question paper during the examination or answer book or additional sheet, during or after the examination.	and all the other subjects the student has already appeared including practical examinations and UG major project and shall not be permitted for the remaining examinations of the subjects of that semester year. The student is also debarred for two consecutive semesters from class work and all university examinations. The continuation of the course by the student is subject to the academic regulations in connection with forfeiture of seat.
5.	Uses objectionable, abusive or offensive language in the answer paper or in letters to the examiners or writes to the examiner requesting him to award pass marks.	Cancellation of the performance in that subject.
6.	Refuses to obey the orders of the chief superintendent/assistant – superintendent / any officer on duty or misbehaves or creates disturbance of any kind in and around the examination hall or organizers a walk out or instigates others to walk out, or threatens the officer-in charge or any person on duty in or outside the examination hall of any injury to his person or to any of his relations whether by words, either spoken or writer or by signs or by spoken or written or by signs or by visible representation, assaults the officer-in-charge, or any person on duty in or outside the examination hall or any of his relations, or indulges in any other act of misconduct or mischief which result in damage to or destruction of property in the examination hall or any part of the college campus or engages in any other act which in the opinion of the officer on duty amounts to use of unfair means or misconduct or has the tendency to disruptthe orderly conduct of the examination.	In case of students of the college, they shall be expelled from examination halls and cancellation of their performance in that subject and all other subjects the student(s) has (have) already appeared and shall not be permitted to appear for the remaining examinations of the subjects of that semester/year. The students also are debarred and forfeit their seats. In case of outsiders, they will be handed over to the police and a police case is registered against them.
7.	Leaves the exam hall taking away answer script or intentionally tears of the script or any thereof inside or outside the examination hall.	Expulsion from the examination hall and cancellation of performance in that subject and all the other subjects the student has already appeared including practical examinations and UG major project and shall not be permitted for the remaining examinations of the subjects of that semester/year. The student is also debarred for two consecutive semesters from class work and all university examinations. The continuation of the course by the student is subject to the academic regulations in connection with forfeiture of seat.

8.	Possess any lethal weapon or firearm in the examination hall.	Expulsion from the examination hall and cancellation of performance in that subject and all other subjects the student has already appeared including practical examinations and UG major project and shall not be permitted for the remaining examinations of the subjects of that semester/year. The student is also debarred and forfeiture of seat.
9.	If student of the college, who is not a student for the particular examination or any person not connected with the college indulges in any malpractice or improper conduct mentioned in clause 6 to 8.	Student of the colleges expulsion from the examination hall and cancellation of the performance in that subject and all the other subjects the student has already appeared including practical examinations and UG major project and shall not be permitted for the remaining examinations of the subjects of that semester/year. The student is also debarred and forfeiture of seat. Person(s) who do not belong to the college will be handed over to police and, a police case will be registered against them.
10.	Comes in a drunken condition to the examination hall.	Expulsion from the examination hall and cancellation of performance in that subject and all other subjects the student has already appeared including practical examinations and UG major project and shall not be permitted for the remaining examinations of the subjects of that semester/year.
11.	Copying detected on the basis of internal evidence, such as, during valuation or during special scrutiny.	Cancellation of performance in that subject and all other subjects the student has appeared including practical examinations and UG major project of that semester/year examinations.
12.	If any malpractice is detected which is not covered in the above clauses 1 to 11 shall be reported to the university for further action to award suitable punishment.	

Malpractices identified by squad or special invigilators will be further investigated through a committee and suitable punishment will be given to the students as mentioned by the University guidelines.

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I B.Tech – I Semester

Sl. No	Code	Subject	L	T	P	D	C
1	E110A	Mathematics-I	3	1	0	0	3
2	E110B	Engineering Chemistry	4	0	0	0	4
3	E110C	Engineering Physics-I	3	1	0	0	3
4	E110D	Professional Communication in English	3	0	0	0	3
5	E113A	Engineering Mechanics	3	1	0	0	3
6	E112A	Basic Electrical and Electronics Engineering	4	0	0	0	4
7	E1101	English Language Communication Skills Lab	0	0	3	0	2
8	E1102	Engineering Workshop	0	0	3	0	2
9	E110F	Environmental Studies	2	0	0	0	0
		Total Credits	**22**	**3**	**6**	**0**	**24**

I B.Tech – II Semester

Sl. No	Code	Subject	L	T	P	D	C
1	E120A	Engineering Physics-II	3	0	0	0	3
2	E120B	Mathematics-II	4	1	0	0	4
3	E120C	Mathematics-III	4	1	0	0	4
4	E125A	Computer Programming in C	3	0	0	0	3
5	E123A	Engineering Drawing	2	0	0	4	4
6	E1201	Engineering Chemistry Lab	0	0	3	0	2
7	E1202	Engineering Physics Lab	0	0	3	0	2
8	E1203	Computer Programming in C Lab	0	0	3	0	2
9	E120E	Professional Ethics	2	0	0	0	0
		Total Credits	**18**	**2**	**9**	**4**	**24**

II B. Tech – I Semester

Sl. No	Code	Subject	L	T	P	C
1	E210C	Complex Analysis & Discrete Mathematics	3	1	0	3
2	E216A	Mathematical Foundations of Computer Science	3	0	0	3
3	E215A	Data Structures Through C	4	0	0	4
4	E216B	Digital Logic Design & Computer Organization	4	1	0	4
5	E215B	Database Management Systems	4	1	0	4
6	E2119	Data Structures Through C Lab	0	0	3	2
7	E2120	Database Management Systems Lab	0	0	3	2
8	E2121	Basic Electrical and Electronics Lab	0	0	3	2
9	E2122	Gender Sensitization	0	0	2	0
		Total Credits	**18**	**3**	**11**	**24**

II B.Tech – II Semester

Sl. No	Code	Subject	L	T	P	C
1	E220A	Managerial Economics and Financial Analysis	3	0	0	3
2	E226A	Operating Systems	4	1	0	4
3	E226B	Object Oriented Programming Through Java	4	1	0	4
4	E225A	Design and Analysis of Algorithms	3	0	0	3
5	E225B	Computer Networks	4	1	0	4
6	E2218	Operating Systems Lab	0	0	3	2
7	E2219	Object Oriented Programming Through Java Lab	0	0	3	2
8	E2220	Computer Networks Lab	0	0	3	2
		Total Credits	**18**	**3**	**9**	**24**

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I Year – I Semester	**3**	**1-0-0**	**3**

(E110A) MATHEMATICS – I
(Common to all branches)

UNIT–I:
Initial Value Problems and Applications

Exact differential equations - Reducible to exact.

Linear differential equations of higher order with constant coefficients: Non homogeneous terms with RHS term of the type e^{ax} , sin ax, cos ax, polynomials in x, e^{ax} V(x), xV(x)-Operator form of the differential equation, finding particular integral using inverse operator, Wronskian of functions, method of variation of parameters.

Applications: Newton's law of cooling, law of natural growth and decay, orthogonal trajectories, Electrical circuits.

UNIT–II:
Linear Systems of Equations
Types of real matrices and complex matrices, rank, echelon form, normal form, consistency and solution of linear systems (homogeneous and Non-homogeneous) - Gauss elimination, Gauss Jordon and LU decomposition methods- Applications: Finding current in the electrical circuits.

UNIT–III:
Eigen values, Eigen Vectors and Quadratic Forms
Eigen values, Eigen vectors and their properties, Cayley - Hamilton theorem (without proof), Inverse and powers of a matrix using Cayley - Hamilton theorem, Diagonalization, Quadratic forms, Reduction of Quadratic forms into their canonical form, rank and nature of the Quadratic forms – Index and signature.

UNIT–IV:
Partial Differentiation
Introduction of partial differentiation, homogeneous function, Euler's theorem, total derivative, Chain rule, Taylor's and Mclaurin's series expansion of functions of two variables, functional dependence, Jacobian.
Applications: maxima and minima of functions of two variables without constraints and Lagrange's method (with constraints)

UNIT-V:
First Order Partial Differential Equations
Formation of partial differential equations by elimination of arbitrary constants and arbitrary functions, Lagranges method to solve the first order linear equations and the standard type methods to solve the non linear equations.

Text Books:

1. Higher Engineering Mathematics by Dr. B. S. Grewal, Khanna Publishers.

A first course in differential equations with modeling applications by Dennis G. Zill, Cengage Learning publishers

References:

1. Advanced Engineering Mathematics by E. Kreyszig, John Wiley and Sons Publisher.
2. Engineering Mathematics by N. P. Bali, Lakshmi Publications.

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(E110B) ENGINEERING CHEMISTRY
(Common to all branches)

UNIT-I:
Water and its treatment: Introduction – hardness of water – causes of hardness – types of hardness: temporary and permanent – expression and units of hardness – Estimation of hardness of water by complexometric method. Numerical problems. Potable water and its specifications-Steps involved in the treatment of potable water - Disinfection of potable water by chlorination and Ozonization. Defluoridation – Nalgonda technique - Determination of F⁻ ion by ion-selective electrode method.

Boiler troubles:
Sludges, scales and Caustic embrittlement. Internal treatment of Boiler feed water (Calgon conditioning – Phosphate conditioning - Colloidal conditioning) .Softening of water by ion-exchange processes. Desalination of water – Electrodialysis& Reverse osmosis. Numerical problems.

UNIT-II:
Electrochemistry and Batteries:
Electrochemistry: Electrode- electrode potential, standard electrode potential, types of electrodes – Construction and functioning of Standard hydrogen electrode, calomel, Quinhydrone and glass electrode. Nernst equation - electrochemical series and its applications. Electrochemical cells: Daniel cell – cell notation, cell reaction and cell emf –Potentiometric titrations and Applications- Determination of pH and EMF. Concept of concentration cells-electrolyte concentration cell. Numerical problems.
Batteries: Cell and battery - Primary battery (dry cell, alkaline cell and Lithium cell) and Secondary battery (lead acid, Ni-Cd and lithium ion cell), **Fuel cells:** Hydrogen –oxygen, phosphoric acid and methanol-oxygen fuel cells – Applications.

UNIT-III:
Polymers: Definition – Classification of polymers with examples – Types of polymerization –
addition and condensation polymerization with examples. **Plastics:** Definition and characteristics- thermoplastic and thermosetting plastics, compounding and fabrication of plastics (compression and injection moulding). Preparation, Properties and engineering applications of PVC and Bakelite.
Fibers: Characteristics of fibers – preparation, properties and applications of Nylon-6, 6 and Dacron. Kevlar- Liquid crystal polymers-Applications.
Rubbers: Natural rubber and its vulcanization.
Elastomers: Characteristics –preparation – properties and applications of Buna-S, Butyl and Thiokol rubber.
Biodegradable polymers: Concept and advantages - Polylactic acid and poly vinyl alcohol and their applications.

UNIT-IV:
Fuels and Combustion: Classification- solid fuels: coal – analysis of coal – proximate and ultimate analysis and their significance. Liquid fuels – petroleum and its refining, cracking – types – moving bed catalytic cracking. Knocking – octane and cetane rating, synthetic petrol - Fischer-Tropsch's process; Gaseous fuels – composition and uses of natural gas, LPG and CNG.
Combustion: Definition, Calorific value of fuel – HCV, LCV-Dulongs Formula; Calculation of air quantity required for combustion of a fuel.

UNIT-V
Engineering Materials and applications:
Lubricants-Classification of lubricants with examples-characteristics of a good lubricants – mechanism of lubrication-properties of lubricants.
Conducting polymers: Characteristics and Classification with examples-mechanism of conduction in trans-polyacetylene and applications of conducting polymers.
Nanomaterials: Introduction, Preparation-Top down & bottom up process-sol gel method and self assembly process. Applications of nanomaterials.
Composites: Introduction- Constituents of composites – advantages, classification and constituents of composites. Fiber reinforced plastics (FRP). Applications of composites.

Text books:
1. Engineering Chemistry by P.C. Jain and M. Jain, Dhanpatrai Publishing Company, New Delhi
2. Engineering Chemistry by Rama Devi, VenkataRamana Reddy and Rath, Cengage learning, New DelhiEngineering Chemistry by Shashi Chawla, Dhanpatrai and Company (P) Ltd. Delhi

Reference Books:
1. Engineering Chemistry by Shikha Agarwal, Cambridge University Press, Delhi
2. Engineering Chemistry by Thirumala Chary and Laxminarayana, Scitech Publishers, Chennai
3. Engineering Chemistry by Andhra Naidu. B.S Publications.
4. Chemistry of Engineering Materials by CV Agarwal,C.P Murthy, A.Naidu, BS Publications.

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B.Tech. IT	**L**	**T-P-D**	**C**
I Year – I Semester	**3**	**1-0-0**	**3**

(E110C) ENGINEERING PHYSICS-I
(Common to CSE,ECE,EEE,IT &ECM)

UNIT-I :
Crystallography: Space lattice, unit cell and lattice parameters, crystal systems, Bravaislattices, atomic radius, co-ordination number and packing factor of SC, BCC, FCC, HCP and diamond, Miller indices, crystal planes and directions, inter planar spacing of orthogonal crystal systems.

UNIT-II :
X-ray Diffraction and Defects in Crystals: Bragg's law, X-ray diffraction methods: Lauemethod, powder method; point defects: vacancies, substitutional, interstitial, Frenkel and Schottky defects, line defects (qualitative) and Burger's vector, surface defects: stacking faults, twin, tilt and grain boundaries

UNIT-III:
Fiber Optics: Principle of optical fiber, construction of fiber, acceptance angle and acceptancecone, numerical aperture, types of optical fibers: step index and graded index fibers, attenuation in optical fibers, applications of optical fibers in medicine and sensors**.**
UNIT-IV:
Interference: Coherence, division of amplitude and division of wave front, interference in thinfilms (transmitted and reflected light), Newton's rings experiment.

Diffraction: Distinction between Fresnel and Fraunhoffer diffraction, diffraction due to singleslit, N-slits, Diffraction grating experiment

UNIT-V:
Polarization: Introduction, Malus's law, double refraction, Nicol prism, Quarter wave and halfwave plates.
Lasers: Characteristics of lasers, spontaneous and stimulated emission of radiation, Einsteincoefficients, population inversion, ruby laser, helium – neon laser, semi conductor laser, applications of lasers.

TEXT BOOKS:
1. Applied Physics – P.K.Mittal (I.K.Internationalhosesepvt Ltd) (New Edition)
2. Enginnering Physics-P.K Palaniswamy (Scitech Publications India) Pvt Ltd, Fifth Print 2010.)
3. Engineering Physics-Senthilkumar ((VRB Publishers Limited,)

REFERENCES

1. Applied Physics for Engineers – A.J. Dekker (Macmillan).
2. Elements of Material Science – V.Raghavant (PHI Publications).
3. Solid State Physics – M. Armugam (Anuradha Publications).
4. A Text Book of Engg Physics – M. N. Avadhanulu& P. G. Khsirsagar– S. Chand & Co.
   Modern Physics by K. Vijaya Kumar, S. Chandralingam: S. Chand &Co.Ltd

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I Year – I Semester		3	0-0-0	3

(E110D) PROFESSIONAL COMMUNICATION IN ENGLISH
(Common to CSE,ECE,EEE,IT &ECM)

UNIT –I:

Chapter entitled '*Presidential Address' by Dr. A.P.J. Kalam* from *"Fluency in English–A Course book for Engineering Students"* published by Orient BlackSwan, Hyderabad.

Vocabulary: Word Formation -- Root Words --The Use of Prefixes and Suffixes–Collocations– Exercises for Practice.

Grammar: Punctuation – Parts of Speech- Articles -Exercises for Practice.

Reading: *Double Angels* by David Scott-Reading and Its Importance- Techniques forEffective Reading- Signal Words- Exercises for Practice

Writing: Writing Sentences- Techniques for Effective Writing-- Paragraph Writing-Types, Structure and Features of a Paragraph-Coherence and Cohesiveness: Logical, Lexical and Grammatical Devices - Exercises for Practice

UNIT –II:

Chapter entitled *Satya Nadella: Email to Employees on his First Day as CEO* from *"Fluencyin English– A Course book for Engineering Students"* Published by Orient BlackSwan, Hyderabad.

Vocabulary: Synonyms and Antonyms–Homonyms, Homophones, Homographs- Exercisesfor Practice (Chapter 17 *'Technical Communication-Principles and Practice'*.

Third Edition published by Oxford University Press may also be followed.)**Grammar:** Verbs-Transitive, Intransitive and Non-finite Verbs–Mood and Tense— Gerund – Words with Appropriate Prepositions – Phrasal Verbs - Exercises for Practice

Reading: Sub-skills of Reading- Skimming, Scanning, Extensive Reading and Intensive Reading - *The Road Not Taken* by **Robert Frost** -- Exercises for Practice

Writing: Letter Writing–Format, Styles, Parts, Language to be used in Formal Letters-Letter of Apology – Letter of Complaint-Letter of Inquiry with Reply – Letter of Requisition –- Exercises for Practice

UNIT –III:

From the book entitled *'Technical Communication-Principles and Practice'. Third Edition* published by Oxford University Press.

Vocabulary: Introduction- A Brief History of Words–Using the Dictionary and Thesaurus– Changing Words from One Form to Another – Confusables (From Chapter 17 entitled '*Grammar and Vocabulary Development*')

Grammar: Tenses: Present Tense- Past Tense- Future Tense- Active Voice – Passive Voice- Conditional Sentences – Adjective and Degrees of Comparison. (From Chapter 17 entitled '*Grammar and Vocabulary Development*')

Reading: Improving Comprehension Skills – Techniques for Good Comprehension-Skimming and Scanning- Non-verbal Signals – Structure of the Text – Structure of Paragraphs – Punctuation – Author's viewpoint (Inference) – Reader Anticipation: Determining the Meaning of Words – Summarizing- Typical Reading Comprehension Questions. (From Chapter 10 entitled '*Reading Comprehension'*)

Writing: Introduction- Letter Writing-Writing the Cover Letter- Cover Letters Accompanying Resumes- Emails. (From Chapter 15 entitled '*Formal Letters, Memos, and Email'*)

UNIT –IV:
Chapter entitled **'*Good Manners' by J.C. Hill*** from ***Fluency in English–A Course book for Engineering Students"*** published by Orient Blackswan, Hyderabad.

Vocabulary: Idiomatic Expressions–One- word Substitutes --- Exercises for Practice(Chapter 17 *'Technical Communication-Principles and Practice'. Third Edition* published by Oxford University Press may also be followed.)**Grammar:** Sequence of Tenses- Concord (Subject in Agreement with the Verb)–Exercises for Practice

Reading: ***'If'*** poem by**Rudyard Kipling**--Tips for Writing a Review ---Author'sViewpoint – Reader's Anticipation-- Herein the Students will be required to Read and Submit a Review of a Book (Literary or Non-literary) of their choice – Exercises for Practice.

Writing: Information Transfer-Bar Charts-Flow Charts-Tree Diagrams etc., -- Exercises for Practice.
Introduction - Steps to Effective Precis Writing – Guidelines- Samples (Chapter 12 entitled '*The Art of Condensation*' from ***Technical Communication-Principles and Practice. Third Edition*** published by Oxford University Press)

UNIT –V:
Chapter entitled **'Father Dear Father 'by Raj Kinger** from **Fluency in English-A CourseBook for Engineering Students"** Published by Orient Blackswan, Hyderabad
Vocabulary: Foreign Words-Words borrowed from other Languages-Exercises for Practice
Grammer: Direct and Indirect Speech-Question Tags-Exercises for Practice

Reading: Predicting the Content- Understanding the Gist – SQ3R Reading Technique-Study Skills – Note Making - Understanding Discourse Coherence – Sequencing Sentences. (From Chapter 10 entitled **'Reading Comprehension'**-*Technical Communication- Principles and Practice. Third Edition* publishedby Oxford University Press.)

Writing: Technical Reports- Introduction – Characteristics of a Report – Categories of Reports –Formats- Prewriting – Structure of Reports (Manuscript Format) -Types of Reports - Writing the Report. (From Chapter 13 entitled **'Technical Reports'** - *Technical Communication- Principles and Practice. Third Edition*published by Oxford University Press.)

Text Books :

1. ***"Fluency in English – A Course book for Engineering Students"*** by Board of Editors**: Hyderabad: Orient BlackSwan Pvt. Ltd. 2016. Print.**

Raman, Meenakshi and Sharma, Sangeeta*. **"Technical Communication- Principles andPractice"**.* **Third Edition. New Delhi: Oxford University Press. 2015. Print.**

Reference Books :

1. Green, David. *Contemporary English Grammar–Structures and Composition.* MacMillan India. 2014 (Print)

Rizvi, M. Ashraf. *Effective Technical Communication*. Tata Mc Graw –Hill. 2015 (Print).

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B.Tech. IT   **L**   **T-P-D**   **C**

I Year – I Semester   **3**   **1-0-0**   **3**

(E113A) ENGINEERING MECHANICS
(Common to all Branches)

UNIT–I: **Introduction to Engineering Mechanics**–Basic Concepts. Systems of Forces: Coplanar Concurrent Forces–Forces in Space–Moment of Force and its Application–Couples and Resultant of Force Systems

Equilibrium of Force Systems: Free Body Diagrams, Equations of Equilibrium - Equilibrium of planar Systems -Equilibrium of Spatial Systems

UNIT–II: Centroid : Centroids of simple figures (from basic principles)–Centroids of Composite Figures

Centre of Gravity: Centre of gravity of simple body (from basic principles), centre of gravity of composite bodies, Pappus theorem.

UNIT–III: Area moment of Inertia : Definition–Polar Moment of Inertia, Transfer Theorem, Moments of Inertia of Composite Figures, Products of Inertia, Transfer Formula for Product of Inertia.

UNIT–IV:Kinematics: Rectilinear and Curvilinear motions–Velocity and Acceleration–Motion of Rigid Body Types and their Analysis in Planar Motion.

UNIT–V: **Kinetics:** Analysis as a Particle and Analysis as a Rigid Body in Translation–Central Force Motion Equations of Plane Motion–Fixed Axis Rotation–Rolling Bodies.

TEXT BOOKS:
1.Engineering. Mechanics / Timoshenko & Young.
2. Engineering Mechanics, Basudev Bhattacharya, Oxford Univ. Press, New Delhi, Second Edition, 2014.
3.Engineering Mechanics / Fedinand . L. Singer / Harper–Collins

REFERENCES:
1.Engineering Mechanics / S.S. Bhavikatti& J.G. Rajasekharappa
2.Engineering Mechanics / Irving. H. Shames Prentice–Hall.
3.Engineering Mechanics UmeshRegl / Tayal.
4. Engineering Mechanicas-Basic Concepts, Y.V.D.Rao, M.Manzoor Hussain,

K.GovindaRajulu, Academic Publishing Company

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I Year – I Semester   **4**   **0-0-0**   **4**

(E112A) BASIC ELECTRICAL AND ELECTRONICS ENGINEERING
(Common to CSE,ECE,EEE,IT &ECM)

UNIT – I: Electrical circuits:
R-L-C Parameters, voltage and current, Independent and Dependent Sources, Source Transformation-V-I relationship for passive elements, Kirchhoff's Laws, Network reduction techniques-series, parallel, series-parallel, star-to-delta, delta-to-star transformation, Nodal Analysis .

Single Phase AC Circuits : R.M.S. and Average values, Form Factor, steady state analysis of series, parallel and series-parallel combinations of R, L and C with sinusoidal excitation, concept of reactance, impedance, susceptance and admittance –phase and phase difference, concept of power factor, phasor notation, complex and polar forms of representation

UNIT-II: Resonance:
Series and parallel resonance circuits, concept of bandwidth and Q factor, Locus Diagrams for RL, RC and RLC Combinations for various parameters.

Network Theorems: Thevenin's, Norton's, Maximum power Transfer, Superposition, Reciprocity, Tellegen's, Milliman's and Compensation theorems for DC and AC excitations.

UNIT-III: P-N Junction Diode:
P-N junction as a Diode, Symbol, Diode equation, volt-Ampere characteristics, Temperature dependence, Ideal versus practical Diode, static and dynamic resistances, Diffusion and Transition Capacitances.
Rectifiers and Filters:
Diode rectifier: Half wave Rectifier, Ripple Factor-Full Wave Rectifier, Bridge Rectifier, Rectifiers with Filters: Inductive Filters, Capacitive Filters, L-section Filters, π- section Filters.
UNIT-IV: Bipolar Junction Transistor (BJT):
Symbol, Construction, principle of Operation, Current Components in a junction transistor Common Emitter, Common Base and Common Collector configurations.
Transistor Biasing -Operating point, DC and AC load lines, Fixed Bias, Collector to Base bias, Self Bias (Voltage divider bias), Bias stability, Stabilization against variations in V_{BE}, β, and $I_{co.}$
Small signal Transistor Analysis, h- Parameters, Definitions, Determination of h-parameters from CE transistor characteristics, Analysis of CE, CB and CC configurations using h-parameters and their Comparison.
UNIT-V: Junction Field Effect Transistor
Construction, Principle of Operation, pinch-off voltage, Volt-Ampere characteristics, comparison of BJT and JFET, small signal Model, MOSFET: Depletion and Enhancement FETs-construction characteristics.

Special Purpose Devices: Breakdown Mechanisms in semi-Conductor Diodes, Zener diode

characteristics, Zener diode as a simple regulator, principle of operation and Characteristics of Tunnel Diode (with help of Energy band diagram) Varactor Diode, Principle of operation of SCR.

TEXT BOOKS:
   1   Millman's Electronic Devices and circuits –J.Millman and C.Halkias, Mc Graw Hill
   Mc Graw Hill
   2.   Micro Electronics by David bell
   3.Network Theory by Sudhakar, Shyam Mohan Palli, TMH.

REFERENCES:
1. Network Theory by N.C.Jagan and C.Lakshminarayana, B.S.Publications.
2. Electronic Devices and Circuits- R.L.Boylestad and Louis Nashelsky, PEI/PHI, 9th Ed, 2006.
3. Engineering circuit analysis-by William Hayt and Jack E.Kemmerly, Mc Graw Hill Company, 6th edition.
4. Linear circuit analysis (time domain phasor and Laplace transform approaches)-2nd edition by Raymond A.DeCarlo and Pen-Min-Lin, Oxford University Press-2004.

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UGC AUTONOMOUS

B.Tech. IT   **L**   **T-P-D**   **C**

I Year – I Semester   **0**   **0-3-0**   **2**

(E1101) ENGLISH LANGUAGE COMMUNICATION SKILLS (ELCS) LAB
(Common to CSE,ECE,EEE,IT &ECM)

Exercise – I

CALL Lab:

Understand: Listening Skill- Its importance–Purpose- Process- Types- Barriers- EffectiveListening.

Practice: Introduction to Phonetics–Speech Sounds–Vowels and Consonants–MinimalPairs- Consonant Clusters- Past Tense Marker and Plural Marker.

Testing Exercises

ICS Lab:

Understand: Spoken vs. Written language- Formal and Informal English.

Practice: Ice-Breaking Activity and JAM Session- Situational Dialogues–Greetings– TakingLeave – Introducing Oneself and Others.

Exercise – II

CALL Lab:

Understand: Structure of Syllables–Word Stress–Weak Forms and Strong Forms– SentenceStress – Intonation.

Practice: Basic Rules of Word Accent - Stress Shift - Weak Forms and Strong Forms- Sentence Stress – Intonation.

Testing Exercises
ICS Lab:

Understand: Features of Good Conversation–Strategies for Effective Communication.

Practice: Situational Dialogues–Role-Play- Expressions in Various Situations–MakingRequests and Seeking Permissions - Telephone Etiquette.

Exercise - III

CALL Lab:

Understand: Errors in Pronunciation-the Influence of Mother Tongue (MTI).

Practice: Common Indian Variants in Pronunciation – Differences between British andAmerican Pronunciation.
Testing Exercise

ICS Lab:

Understand: Descriptions- Narrations- Giving Directions and Guidelines.

Practice: Giving Instructions–Seeking Clarifications–Asking for and Giving Directions–Thanking and Responding – Agreeing and Disagreeing – Seeking and Giving Advice – Making Suggestions

Exercise – IV

CALL Lab:

Understand: Listening for General Details.

Practice: Listening Comprehension Tests.

Testing Exercises

ICS Lab:

Understand: Public Speaking–Exposure to Structured Talks - Non-verbal Communication-Presentation Skills.

Practice: Making a Short Speech–Extempore- Making a Presentation.

Exercise – V

CALL Lab:

Understand: Listening for Specific Details.

Practice: Listening Comprehension Tests.

Testing Exercises

ICS Lab:

Understand: Group Discussion- Interview Skills.

Practice: Group Discussion- Mock Interviews.

Minimum Requirement of infrastructural facilities for ELCS Lab:

1. **Computer Assisted Language Learning (CALL) Lab:**

    The Computer Assisted Language Learning Lab has to accommodate 40 students with40 systems, with one Master Console, LAN facility and English language learning software for self- study by students.

    System Requirement (Hardware component):

    Computer network with LAN facility (minimum 40 systems with multimedia) with the following specifications:

    Computers with Suitable Configuration

    High Fidelity Headphones

2. Interactive Communication Skills (ICS) Lab:

The Interactive Communication Skills Lab: A Spacious room with movable chairs andaudio-visual aids with a Public Address System, a T. V. or LCD, a digital stereo –audio and video system and camcorder etc.

Lab Manuals:

1) A book entitled "***ELCS Lab Manual– A Workbook for CALL and ICS Lab Activities"*** by Board of Editors: Hyderabad: Orient BlackSwan Pvt. Ltd. 2016. Print.
2) Hart, Steve; Nair, Aravind R.; Bhambhani, Veena. ***"EMBARK- English forundergraduates"*** Delhi: Cambridge University Press. 2016. Print.

Suggested Software:

1) Cambridge Advanced Learners' English Dictionary with CD.
2) Grammar Made Easy by Darling Kindersley.
3) Punctuation Made Easy by Darling Kindersley.
4) Oxford Advanced Learner's Compass, 8th Edition.
5) English in Mind (Series 1-4), Herbert Puchta and Jeff Stranks with Meredith Levy, Cambridge.
6) English Pronunciation in Use (Elementary, Intermediate, Advanced) Cambridge University Press.

TOEFL and GRE (KAPLAN, AARCO and BARRONS, USA, Cracking GRE by CLIFFS).

References:

JayashreeMohanraj. *Let Us Hear Them Speak*. New Delhi: Sage Texts. 2015. Print. Hancock, M. *English Pronunciation in Use. Intermediate Cambridge*: Cambridge University Press. 2009. Print.

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B.Tech. IT	L	T-P-D	C
I Year – I Semester	0	0-3-0	2

(E1102) ENGINEERING WORKSHOP
(Common to CSE,ECE,EEE,IT &ECM)

TRADES FOR EXERCISES:

1) Carpentry

2) Fitting

3) Tin-Smithy and Development of jobs carried out and soldering.

4) Black Smithy

5) House-wiring

6) Foundry

7) Welding

2. TRADES FOR DEMONSTRATION AND EXPOSURE:

 Plumbing, Machine Shop, Power tools in construction, wood working and mechanical engineering.

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B.Tech. IT   **L**   **T-P-D**   **C**

I Year – I Semester   **2**   **0-0-0**   **0**

(E110F) ENVIRONMENTAL STUDIES
(Common to CSE,ME,MIE& IT)

UNIT-I:

Ecosystems,NaturalResources&Biodiversity: concept,Classification of Resources:Water resources, Land resources, Forest resources,Mineral resources,Energyresources. Concept of ecosystem,Classification of ecosystem,Functions of ecosystem.Biodiversity, levels,hotspots, values of biodiversity, threats to biodiversity, conservation of biodiversity.

UNIT-II:

Global Environmental Probelems And Global Efforts: Deforestation Green house effect, Global Warming, Sea level rise, Ozone depletion. International conventions/protocols green-belt-development, Concept of Green Building, Clean Development Mechanism(CDM).
Environmental Impact Assessment (Eia) And Environmental Management Plan: definition of Impact, classification of impacts, methods of baseline data acquisition. Impacts on different components: such as human health resources, air, water, flora, fauna and society, impact assessment methodologies. Environmental management plan (EMP)

UNIT-III:

Environmental Policy, Legislation, Rules And Regulations & Towards Sustainable Future: Concept of Sustainable Development, Threats to Sustainability, Strategies for achieving Sustainable development, Environmental Ethics, Environmental Economics, Concept of Green Computing.

Text Books:
1. Text Book Of Environmental Science and Technology by M.Anji Reddy 2007
2. Principles of Environmental Science and Engineering by P.Venugopal Rao
3. Introduction to Environmental Studies by K.Mukkanti

Text book of Envirtonmental Studies by Kaushik&Anubha Kaushik

Reference Books:
1. Tata McgrawHill : Introduction to Environmental Studies by Benny Joseph

Environmental studies by ErachBharucha 2005, University Grants Commission, University Press

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B.Tech. IT	**L**	**T-P-D**	**C**
I Year – II Semester	**3**	**0-0-0**	**3**

(E120A) ENGINEERING PHYSICS – II
(Common to EEE, ECE,CSE,IT&ECM)

UNIT - I
Principles of Quantum Mechanics: Waves and particles, de-Broglie hypothesis, matter waves, Davisson and Germer experiment, Heisenberg uncertainty principle, Schrodinger time independent wave equation, physical significance of wave function, particle in 1-D potential box, electron in periodic potential, Kronig-Penny model (qualitative treatment), E-K curve, origin of energy band formation in solids.

UNIT - II
Semiconductor Physics: Fermi level in intrinsic and extrinsic semiconductors, calculation of carrier concentration in intrinsic & extrinsic semiconductors, direct and indirect band gap semiconductors, formation of PN junction, open circuit PN junction, energy diagram of PN junction diode, solar cell: I-V characteristics and applications.

UNIT - III
Dielectric Properties: Electric dipole, dipole moment, dielectric constant, polarizability, electric susceptibility, displacement vector, electronic, ionic and orientation polarizations and calculation of their polarizabilitites, internal field, Clausius-Mossotti relation, Piezoelectricity, pyroelectricity and ferroelectricity-BaTiO3 structure.

UNIT - IV
Magnetic Properties & Superconductivity: Permeability, field intensity, magnetic field induction, magnetization, magnetic susceptibility, origin of magnetic moment, Bohr magneton, classification of dia, para and ferro magnetic materials on the basis of magnetic moment, hysteresis curve based on domain theory, soft and hard magnetic materials, properties of anti-ferro and ferri magnetic materials,
Superconductivity: Superconductivity phenomenon, Meissner effect, applications of superconductivity.

UNIT - V
Introduction to nanoscience: Origin of nanoscience, nanoscale, surface to volume ratio, quantum confinement, dominance of electromagnetic forces, random molecular motion, bottom-up fabrication: Sol-gel, CVD and PVD techniques, top-down fabrication: ball mill method, characterization by XRD, SEM and TEM.

Text Books:
1. Solid State Physics, A. J. Dekkar, Macmillan publishers Ind. Ltd.,
2. Solid State Physics, Chales Kittel, Wiley student edition.
3. Fundamentals of Physics, Alan Giambattisa, BM Richardson and Robert C Richardson, Tata McGraw hill Publishers.

Reference Books:
1. Modern Engineering Physics, K. Vijaya Kumar, S. Chandralingam S. Chand & Co. Pvt. Ltd.,
2. University Physics, Francis W. Sears, Hugh D. Young, MarleZeemansky and Roger A Freedman, Pearson Education.
3. Fundamentals of Acoustics, Kinster and Frey, John Wiley and Sons.
4. Introduction to Quantum Mechanics Leonard I. Schiff McGraw-Hill

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B.Tech. IT   **L**   **T-P-D**   **C**

I Year – II Semester   **4**   **1-0-0**   **4**

(E120B) MATHEMATICS- II
(Advanced Calculus)
(Common to EEE, ECE,CSE,IT&ECM)

UNIT–I

Laplace Transforms: Laplace transforms of standard functions, Shifting theorems,derivatives and integrals, properties- Unit step function, Dirac's delta function, Periodic function, Inverse Laplace transforms, Convolution theorem (without proof).
Applications: Solving ordinary differential equations (initial value problems) using Laplace transforms.

UNIT-II

Beta and Gamma Functions: Beta and Gamma functions, properties, relation between Betaand Gamma functions, evaluation of integrals using Beta and Gamma functions.
Applications: Evaluation of integrals.

UNIT–III

Multiple Integrals: Double and triple integrals, Change of variables, Change of order ofintegration.
Applications: Finding areas, volumes& Center of gravity (evaluation using Beta and Gamma functions)

UNIT–IV

Vector Differentiation: Scalar and vector point functions, Gradient, Divergence, Curl andtheir physical and geometrical interpretation, Laplacian operator, Vector identities.

UNIT–V

Vector Integration: Line Integral, Work done, Potential function, area, surface and volumeintegrals, Vector integral theorems: Greens, Stokes and Gauss divergence theorems (without proof) and related problems.

TEXT BOOKS:

1. Advanced Engineering Mathematics by R K Jain & S R K Iyengar, Narosa Publishers
2. Engineering Mathematics by Srimanthapal and Subodh C. Bhunia, Oxford Publishers

REFERENCE BOOKS:

1. Advanced Engineering Mathematics by Peter V. O. Neil, Cengage Learning Publishers.
2. Advanced Engineering Mathematics by Lawrence Turyn, CRC Press

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B.Tech. IT	**L**	**T-P-D**	**C**
I Year – II Semester	**4**	**1-0-0**	**4**

(E120C) Mathematics - III
Statistical and Numerical Methods
(Common to All Branches)

UNIT – I

Random variables and Distributions:

Introduction, Random variables, Discrete random variable, Continuous random variable,Probability ,istribution function, Probability density function, Expectation, Moment generating function, Moments and properties. Discrete distributions: Binomial and geometric distributions. Continuous distribution: Normal distributions UNIT – II

Sampling Theory: Introduction, Population and samples, Sampling distribution of means (σKnown)-Central limit theorem, t-distribution, Sampling distribution of means (σunknown)-Sampling distribution of variances – χ^2 and F- distributions, Point Estimation, Maximum error of estimate, Interval estimation.

UNIT – III

Tests of Hypothesis: Introduction, Hypothesis, Null and Alternative Hypothesis, Type I andType II errors,

Level of significance, One tail and two-tail tests, Tests concerning one mean and proportion, two means

-proportions and their differences-ANOVA for one-way classified data.

UNIT – IV

Algebraic and Transcendental Equations & Curve Fitting: Introduction, Bisection Method, Method of False position, Iteration methods: fixed point iteration and Newton Raphson methods. Solving linear system of equations by Gauss-Jacobi and Gauss-Seidal Methods.

Curve Fitting: Fitting a linear, second degree, exponential, power curve by method of least squares.

UNIT – V

Numerical Integration and solution of Ordinary Differential equations: Trapezoidal rule-Simpson's 1/3rd and 3/8th rule- Solution of ordinary differential equations by Taylor's series, Picard's method of successive approximations, Euler's method, Runge-Kutta method (second and fourth order)

Text Books:
  1. Probability and Statistics for Engineers by Richard Arnold Johnson, Irwin Miller and John E. Freund, New Delhi, Prentice Hall.
  2. Probability and Statistics for Engineers and Sciences by Jay L. Devore, Cengage Learning.
  3. Numerical Methods for Scientific and Engineering Computation by M. K. Jain, S. R. K. Iyengar and R. K. Jain, New Age International Publishers

References:

1. Fundamentals of Mathematical Statistics by S. C. Guptha& V. K. Kapoor, S. Chand.
2. Introductory Methods of Numerical Analysis by S. S. Sastry, PHI Learning Pvt. Ltd.
3. Mathematics for engineers and scientists by Alan Jeffrey, 6th edition, CRC press.

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B.Tech. IT	**L**	**T-P-D**	**C**
I Year – II Semester	**3**	**0-0-0**	**3**

(E125A) COMPUTER PROGRAMMING IN C
(Common to EEE, ECE,CSE,IT&ECM)

UNIT - I

Introduction to Computers – Computer Systems, Computing Environments, Computer Languages, Creating and running programs, Program Development, algorithms and flowcharts , Number systems-Binary, Decimal, Hexadecimal and Conversions, storing integers and real numbers.

Introduction to C Language – Background, C Programs, Identifiers, Types, Variables, Constants, Input / Output, Operators(Arithmetic, relational, logical, bitwise etc.), Expressions, Precedence and Associativity, Expression Evaluation, Type conversions, Statements- Selection Statements(making decisions) – if and switch statements, Repetition statements (loops)-while, for, do-while statements, Loop examples, other statements related to looping – break, continue, goto, Simple C Program examples.

UNIT - II

Functions-Designing Structured Programs, Functions, user defined functions, inter function communication, Standard functions, Scope, Storage classes-auto, register, static, extern, scope rules, type qualifiers, recursion- recursive functions, Limitations of recursion, example C programs.

Arrays – Concepts, using arrays in C, inter function communication, array applications- linear search, binary search and bubble sort, two – dimensional arrays, multidimensional arrays, C program examples.

UNIT - III

Pointers – Introduction (Basic Concepts), Pointers for inter function communication, pointers to pointers, compatibility, Pointer Applications-Arrays and Pointers, Pointer Arithmetic and arrays, Passing an array to a function, memory allocation functions, array of pointers, programming applications, pointers to void, pointers to functions.

Strings – Concepts, C Strings, String Input / Output functions, arrays of strings, string manipulation functions, string / data conversion, C program examples.

UNIT - IV

Enumerated, Structure ,and Union Types– The Type Definition (typedef), Enumerated types, Structures –Declaration, initialization, accessing structures, operations on structures, Complex structures-Nested structures, structures containing arrays, structures containing pointers, arrays of structures, structures and functions, Passing structures through pointers, self referential structures, unions, bit fields, C programming examples, command–line arguments, Preprocessor commands.

UNIT – V

Input and Output – Concept of a file, streams, text files and binary files, Differences between text and binary files, State of a file, Opening and Closing files, file input / output functions (standard library input / output functions for files), file status functions (error handling), Positioning functions (fseek ,rewind and ftell), C program examples.

TEXT BOOKS:
6. Computer Science: A Structured Programming Approach Using C, B.A. Forouzan and R. F. Gilberg, Third Edition, Cengage Learning.
   Programming in C. P. Dey and M Ghosh , Second Edition, Oxford University Press.

REFERENCE BOOKS:
1. The C Programming Language, B.W. Kernighan and Dennis M. Ritchie, Second Edition, Pearson education.
2. Programming with C, B. Gottfried, 3rdedition, Schaum's outlines, McGraw Hill Education(India) Pvt Ltd.
3. C From Theory to Practice, G S. Tselikis and N D. Tselikas, CRC Press.

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B.Tech. IT	**L**	**T-P-D**	**C**
I Year – II Semester	**2**	**0-0-4**	**4**

(E123A) ENGINEERING DRAWING
(Common to CSE , ECE , ECM, EEE & IT)

UNIT – I

INTRODUCTION TO ENGINEERING DRAWING: Principles of Engineering Drawing and their Significance – Drawing Instruments and their Use – Conventions in Drawing – Lettering – BIS Conventions.

CONSTRUCTION OF CURVES USED IN ENGINEERING PRACTICE:

a) Conic Sections

  Ellipse- General, Concxentric Circle, Arcs of circle and Oblong Method

  Parabola- General, Tangent and Rectangle Methods

  Hyperabola-General, Point/Rectangle Method

b) Cycloid, Epicycloid and Hypocycloid

c) Involute for Circle, Rectangle and Triangle

UNIT – II

PROJECTIONS OF POINTS AND LINES: Principles of Orthographic Projections – Conventions – First and Third Angle, Projections of Points and Lines inclined to planes, True lengths, traces.

UNIT – III

PROJECTIONS OF PLANES: Projections of regular Planes, auxiliary planes and Auxiliary projection inclined to both planes.

UNIT –I V

PROJECTIONS OF SOLIDS: Projections of Regular Solids inclined to both planes – Auxiliary Views.

UNIT- V: ISOMETRIC PROJECTIONS: Principles of Isometric Projection – Isometric Scale – Isometric Views– Conventions – Isometric Views of Lines, Plane Figures, Simple and Compound Solids – Isometric Projection of objects having non- isometric lines. Isometric Projection of Spherical Parts.

ORTHOGRAPHIC PROJECTIONS: Conversion of Isometric Views to Orthographic Views – Conventions.

TEXT BOOKS :

1. Engineering Drawing, N.D. Bhat / Charotar

2. Engineering Drawing and Graphics, Venugopal / New age.

3. Engineering Drawing – Basant Agrawal, TMH

REFERENCES:

1. Engineering drawing – P.J. Shah.S.Chand.

2. Engineering Drawing, Narayana and Kannaiah / Scitech publishers.

3. Engineering Drawing- Johle/Tata Macgraw Hill.

4. Computer Aided Engineering Drawing- Trymbaka Murthy- I.K. International.

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UGC AUTONOMOUS

B.Tech. IT		L	T-P-D	C
I Year – II Semester		0	0-3-0	2

(E1201) ENGINEERING CHEMISTRY LAB
(Common to All Branches)
Cycle-I

1. Determination of Conc. of $KMnO_4$ by colorimetric method.
2. Estimation of copper by colorimetric method.
3. Conductometric titration of mixture of acids vs strong base.
4. Titration of strong acid vs strong base by potentiometry.
5. Determination of pH of the given solution.
6. Determination of viscosity of sample oil by redwood viscometer
7. Preparation of Fe nanoparticles

Cycle-II

1. Estimation of hardness of water by EDTA method.
2. Estimation of manganese dioxide in pyrolusite.
3. Determination of Surface tension of lubricants
4. Preparation of Aspirin
5. Preparation of Thiokol rubber

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B.Tech. IT	**L**	**T-P-D**	**C**
I Year – II Semester	**0**	**0-3-0**	**2**

(E1202) ENGINEERING PHYSICS LAB
(Common to EEE, ECE,CSE,IT&ECM))
<u>Cycle-I</u>

1. Dispersive power of the material of a prism – Spectrometer.

2. Torsional pendulum – Rigidity modulus.

3. Newton's Rings – Radius of curvature of Plano convex lens.

4. Melde's experiment – Transverse and longitudinal modes.

5. Charging, discharging and time constant of an R-C circuit.

6. L-C-R circuit – Resonance & Q-factor.

<u>Cycle-II</u>

7. Magnetic field along the axis of current carrying coil – Stewart and Gees method and to verify Biot –   Savart's law.

8. Study the characteristics of LED and LASER diode.

9. Bending losses of fibres& Evaluation of numerical aperture of a given fibre.

10. Energy gap of a material of p-n junction.

11. Determination of wavelengths of white source – Diffraction grating.

12. Wavelength of light, resolving power and dispersive power of a diffraction grating using laser.

13.Dielectric constant of a material / V-I characteristics of a solar cell.

Note: Minimum 10 experiments must be performed.

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B.Tech. IT   **L**   **T-P-D**   **C**

I Year – II Semester   **0**   **0-3-0**   **2**

(E1203) COMPUTER PROGRAMMING IN C LAB
(Common to EEE, ECE,CSE,IT&ECM)

1. **a)** Write a C program to find the factorial of a positive integer.
    b) Write a C program to find the roots of a quadratic equation.
2. **a)** Write a C program to determine if the given number is a prime number or not.
    b) A Fibonacci sequence is defined as follows: the first and second terms in the sequence are 0 and 1. Subsequent terms are found by adding the preceding two terms in the sequence. Write a C program to generate the first nterms of the sequence.
3. **a)** Write a C program to construct a pyramid of numbers.
    b) Write a C program to calculate the following
    Sum: $Sum=1-x^2/2! +x^4/4!-x^6/6!+x^8/8!-x^{10}/10!$
4. **a)** The least common multiple (lcm) of two positive integers a and b is the smallest integer that is evenly divisible by both a and b. Write a C program that reads two integers and calls lcm (a, b) function that takes two integer arguments and returns their lcm. The lcm (a, b) function should calculate the least common multiple by calling the gcd (a, b) function and using the following relation:
    LCM (a,b) = ab / gcd (a,b)
    b) Write a C program that reads two integers n and r to compute the ncr value using the following relation:
ncr (n,r) = n! / r! (n-r)! . Use a function for computing the factorial value of an integer.
5. **a)** Write C program that reads two integers x and n and calls a recursive function to compute xn
    b) Write a C program that uses a recursive function to solve the Towers of Hanoi problem.
    c) Write a C program that reads two integers and calls a recursive function to compute ncr value.
6. **a)** Write a C program to generate all the prime numbers between 1 and n, where n is a value supplied by the user using Sieve of Eratosthenes algorithm.
    b) Write a C program that uses non recursive function to search for a Key value in a given list of integers. Use linear search method.
7. **a)** Write a menu-driven C program that allows a user to enter n numbers and then choose between finding the smallest, largest, sum, or average. The menu and all the choicesare to be functions. Use a switch statement to determine what action to take. Display anerror message if an invalid choice is entered.
    b) Write a C program that uses non recursive function to search for a Key value in a given sorted list of integers. Use binary search method.
8. **a)** Write a C program that implements the Bubble sort method to sort a given list of integers in ascending order.
    b) Write a C program that reads two matrices and uses functions to perform the following:
i) Addition of two matrices
    ii) Multiplication of two matrices

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

i) to insert a sub-string into a given main string from a given position.

ii) to delete n characters from a given position in a given string.

b) Write a C program that uses a non recursive function to determine if the given string is a Palindrome or not.

10. a) Write a C program to replace a substring with another in a given line of text.

b) Write a C program that reads 15 names each of up to 30 characters, stores them in anarray, and uses an array of pointers to display them in ascending (ie. alphabetical) order.

11. a) 2's complement of a number is obtained by scanning it from right to left and complementing all the bits after the first appearance of a 1. Thus 2's complement of 11100 is 00100. Write a C program to find the 2's complement of a binary number.

b) Write a C program to convert a positive integer to a roman numeral. Ex. 11 is converted to XI.

12. a) Write a C program to display the contents of a file to standard output device.

b) Write a C program which copies one file to another, replacing all lowercase characters with their uppercase equivalents.

13. a) Write **a C** program to count the number of times a character occurs in a text file. The file name and the character are supplied as command-line arguments.

b) Write a C program to compare two files, printing the first line where they differ.

14. a) Write a C program to change the nth character (byte) in a text file. Use fseek function.

b) Write a C program to reverse the first n characters in a file. The file name and n are specified on the command line. Use fseek function.

15. a) Write a C program to merge two files into a third file (i.e., the contents of the firs t file followed by those of the second are put in the third file).

b) Define a macro that finds the maximum of two numbers. Write a C program that uses the macro and prints the maximum of two numbers.

Reference Books:

1. Mastering C, K.R. Venugopal and S.R. Prasad, TMH Publishers.
2. Computer Programming in C, V. Rajaraman, PHI.
3. Programming in C, Stephen G. Kochan, Fourth Edition, Pearson Education.
4. C++: The complete reference, H. Schildt, TMH Publishers.

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B.Tech. IT		L	T-P-D	C
I Year – II Semester		2	0-0-0	0

(E120E) PROFESSIONAL ETHICS
(Common to CSE,IT, ME & CE)

UNIT - I:
Basic Concepts
Introduction, Ethics-Ethical Dilemma-Morals, , emotional, intelligence, Indian and western thoughts on ethics, value education, domains of learning, human values, attitudes, Basic Ethical Principles. Meaning of profession, professionalism, professional's roles and professional risks, professional accountability, successful professional, engineering professionals, engineering ethics, roles of engineers,

UNIT - II:
Global issues and safety
Introduction, current scenario, business ethics, environmental ethics, computer ethics, ethical hacking and its dilemma,, ethics in research, intellectual property rights, patents, trade marks, managers and engineers responsibility , Engineerng ethics.

UNIT - III:
Ethical codes and audits
Introduction need and types of professional ethical codes, sample standard codes, ethical codes for corporate entities and non-profit organization, charitable institutions, limitations of the codes, need for ethical audit, ethical profile of organizations

Reference Books:
1. **Professional ethics** and human value by D.R.Kiran, Tata McGraw Hills education.
2. **Ethics in engineering** by Mike W. Martin and Roland Schinzinger, Tata McGraw Hills education.
3. **Fundamental of Ethics** by Edmund G Seebauer and Robert L.Barry, Oxford university press.
4. **Professional ethics** and human values by R.S.Nagarajan, New age international.
5. **Professional ethics** by R. Subramanian, Oxford press.

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B.Tech. IT		**L**	**T-P-D**	**C**
II Year - I Semester		**3**	**1-0-0**	**3**

(E210C) Complex Analysis and Discrete Mathematics
(Common to IT & CSE)

UNIT–I:
Graph Theory
Introductions-Concepts-Definitions-Basic Result-Trees-and Cut sets-Definitions and basic results of Lattice Theory.

UNIT–II:
Z-Transforms
Introduction-Definition-Some standard Z-Transforms-Linearity Property-Damping Rule-some standard result-Shifting u_n to the right and to the left Multiplication by n-Two basic theorems (Initial and Final) – Some useful Z-transforms-Some useful inverse Z-transforms-Convolution Theorem-Convergence of Z-Transforms-Two side Z-Transform-Evaluation of Z-Transforms-Applications to Difference Equations

UNIT–III:
Functions of a complex variable
Continuity – Differentiability – Analyticity – Properties – Cauchy-Riemann conditions, Maxima – Minima principle, Harmonic and conjugate harmonic functions – Milne – Thompson method

UNIT–IV:
Complex integration
Line integral – evaluation along a path and by indefinite integration – Cauchy's integral theorem – Cauchy's integral formula – Generalized integral formula. Radius of convergence – Expansion in Taylor's series, Maclaurin's series and Laurent series

UNIT-V:
Complex power series
Singular point –Isolated singular point – pole of order m – essential singularity. (Distinction between the real analyticity and complex analyticity)

Contour Integration
Residue – Evaluation of residue by formula and by Laurent series - Residue theorem, Evaluation of integrals of the type

(a) Improper real integrals $\int_{-\infty}^{\infty} f(x)dx$ (b) $\int_{c}^{c+2\pi} f(\cos\theta, \sin\theta)d\theta$

Text Books:
1. Higher Engineering Mathematics by Dr. B. S. Grewal, Khanna Publishers.
2. Advanced Engineering Mathematics by E. Kreyszig, John Wiley and Sons Publisher

Reference Books:
1. Engineering Mathematics by N. P. Bali, Lakshmi Publications.
2. Advanced Engineering Mathematics by H.K.Dass, S.Chand Publications

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B.Tech. IT	**L**	**T-P-D**	**C**
II Year - I Semester	**3**	**0-0-0**	**3**

(E216A) MATHEMATICAL FOUNDATIONS OF COMPUTER SCIENCE
(Common to IT & CSE)

UNIT - I:
Mathematical Logic:
Statements and notations, Connectives, Well formed formulas, Truth Tables, tautology, equivalence implication, Normal forms, Quantifiers, universal quantifiers.
Predicates:
Predicative logic, Free & Bound variables, Rules of inference, Consistency, proof of contradiction, Automatic Theorem Proving.

UNIT - II:
Relations:
Properties of Binary Relations, equivalence, transitive closure, compatibility and partial ordering relations, Lattices, Hasse diagram.
Functions:
Inverse Function Composition of functions, recursive Functions, Lattice and its Properties.
Algebraic structures:
Algebraic systems Examples and general properties, Semi groups and monoids, groups, sub groups, homomorphism, Isomorphism.

UNIT - III:
Elementary Combinatorics:
Basis of counting, Combinations & Permutations, with repetitions, Constrained repetitions, Binomial Coefficients, Binomial Multinomial theorems, the principles of Inclusion – Exclusion. Pigeon hole principles and its application.

UNIT - IV:
Recurrence Relation:
Generating Functions, Function of Sequences Calculating Coefficient of generating function, Recurrence relations, solving recurrence relation by substitution and Generating funds. Characteristics roots solution of In homogeneous Recurrence Relation.

UNIT - V:
Graph Theory:
Representation of Graph, DFS, BFS, Spanning Trees, planar Graphs. Graph Theory and Applications, Basic Concepts Isomorphism and Sub graphs, Multi graphs and Euler circuits, Hamiltonian graphs, Chromatic Numbers.
Text Books:
1. **Elements of DISCRETE MATHEMATICS**- A computer Oriented Approach- C L Liu, D P Mohapatra. Third Edition, Tata McGraw Hill.
2. **Discrete Mathematics** by RK Bisht,HS Dhami, Oxford University Press.

Reference Books:

1. **Discrete Mathematics for Computer Scientists & Mathematicians**, J.L. Mott, A. Kandel, T.P. Baker, PHI.
2. **Discrete and Combinational Mathematics**- An Applied Introduction-5th Edition – Ralph. P.Grimaldi.Pearson Education
3. **Discrete Mathematics and its Applications**, Kenneth H. Rosen, Fifth Edition.TMH.

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II Year - I Semester   **4**   **0-0-0**   **4**

(E215A) DATA STRUCTURES THROUGH C
(Common to IT & CSE)

UNIT - I:
Data Structures – Introduction to Data Structures, abstract data types, Linear list – singly linked list implementation, insertion, deletion and searching operations on linear list, circular linked list implementation, Doubly linked list implementation, insertion, deletion and searching operations. Applications of linked lists.

UNIT - II:
Stacks-Operations, array and linked representations of stacks, stack applications-infix to postfix conversion, postfix expression evaluation, recursion implementation. Queues-operations, array and linked representations. Circular Queue operations, Dequeue, applications of queue

UNIT - III:
Trees – Definitions, Binary tree representation, Binary search tree, binary tree traversals, AVL tree – operations, B-tree – operations, B+ trees, Red Black tree.

UNIT - IV:
Graphs: Terminology, sequential and linked representation, graph traversals : Depth First Search & Breadth First Search implementation. Spanning trees, Prims and Kruskals method.

UNIT - V:
Searching and Sorting – Big O Notation, Sorting- selection sort, bubble sort, insertion sort, quick sort, merge sort, Searching-linear and binary search methods.

Text Books:
1. **Data Structures Using C** Reema Thareja, Oxford University Press, 2011 Learning.
2. **Data Structures Using C** (Paperback) by Aaron M. Tenenbaum

Reference Books:
1. **C Programming & Data Structures**, B.A.Forouzan and R.F. Gilberg, Third Edition, Cengage
2. **C& Data structures** – P. Padmanabham, Third Edition, B.S. Publications.
3. **Data Structures using C** – A.M.Tanenbaum, Y.Langsam, and M.J. Augenstein, Pearson Education

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II Year - I Semester	**4**	**1-0-0**	**4**

(E216B) DIGITAL LOGIC DESIGN & COMPUTER ORGANIZATION
(Common for IT & CSE)

UNIT - I:
Basic Structure of Computers
Computer Types, Functional units, Basic operational concepts, Bus structures, Software, Performance, multiprocessors and multi computers, Computer Generations. Data Representation: Binary Numbers, Fixed Point Representation. Floating – Point Representation. Number base conversions, Octal and Hexadecimal Numbers, complements, Signed binary numbers, Binary codes.

UNIT - II:
Digital Logic Circuits - I
Basic Logic Functions, Logic gates, universal logic gates, Minimization of Logic expressions. Flip-flops, Combinational Circuits. Digital Logic Circuits -II: Registers, Shift Registers, Binary counters, Decoders, Multiplexers, Programmable Logic Devices.

UNIT - III:
Computer Arithmetic
Algorithms for fixed point and floating point addition, subtraction, multiplication and division operations. Hardware Implementation of arithmetic and logic operations, High performance arithmetic. Instruction Set & Addressing: Memory Locations and Addresses, Machine addresses and sequencing, Various Addressing Modes, Instruction Formats, Basic Machine Instructions. IA-32 Pentium example.

UNIT - IV:
Processor Organization
Introduction to CPU, Register Transfers, Execution of Instructions, Multiple Bus Organization, Hardwired Control, Micro programmed Control Memory Organization: Concept of Memory, RAM, ROM memories, memory hierarchy, cache memories, virtual memory, secondary storage, memory management requirements.

UNIT - V:
Input / Output Organization
Introduction to I/O, Interrupts- Hardware, Enabling and disabling Interrupts, Device Control, Direct memory access, buses, interface circuits, standard I/O Interfaces.

Text Books:
1. **Computer Organization** – Carl Hamacher, Zvonko Vranesic, Safwat Zaky, fifth edition, McGraw Hill.
2. **Computer Architecture and Organization**- An Integrated Approach, Miles Murdocca, Vincent Heuring, Second Edition, Wiley India.

Reference Books:

1. **Computer Systems Architecture** – M.Moris Mano, IIIrd Edition, Pearson
2. **Computer Organization and Architecture** – William Stallings Sixth Edition, Pearson
3. **Digital Logic Design & Computer Organization** with Computer Architecture for Security-Nikrouz Faroughi, McGrawHill Education

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(E215B) DATABASE MANAGEMENT SYSTEMS
(Common for IT & CSE)

UNIT - I:

Data base System Applications, data base System VS file System – View of Data – Data Abstraction –Instances and Schemas – data Models – the ER Model – Relational Model – Other Models – Database Languages – DDL – DML – database Access for applications Programs – data base Users and Administrator – Transaction Management – data base System Structure – Storage Manager – the Query Processor

ER diagrams – Beyond ER Design Entities, Attributes and Entity sets – Relationships and Relationship sets – Additional features of ER Model – Concept Design with the ER Model

UNIT - II:

Introduction to the Relational Model

-Integrity Constraint Over relations – Enforcing Integrity constraints – Querying relational data – Logical data base Design – Introduction to Views – Destroying /altering Tables and Views.

Relational Algebra

-Selection and projection set operations – renaming – Joins – Division – Examples of Algebra overviews – Relational calculus – Tuple relational Calculus – Domain relational calculus – Expressive Power of Algebra and calculus.

UNIT - III:

Form of Basic SQL Query

-Examples of Basic SQL Queries – Introduction to Nested Queries – Correlated Nested Queries Set – Comparison Operators – Aggregative Operators – NULL values – Comparison using Null values – Logical connectivity"s – AND, OR and NOT – Impact on SQL Constructs – Outer Joins – Disallowing NULL values – Complex Integrity Constraints in SQL Triggers and Active Data bases.

Schema refinement

-Problems Caused by redundancy – Decompositions – Problem related to decomposition – reasoning about FDS – FIRST, SECOND, THIRD Normal forms – BCNF – Lossless join Decomposition – Dependency preserving Decomposition – Schema refinement in Data base Design – Multi valued Dependencies – FORTH Normal Form.

UNIT - IV:

Transaction Concept

-Transaction State- Implementation of Atomicity and Durability – Concurrent – Executions – Serializability- Recoverability– Implementation of Isolation – Testing for serializability- Lock – Based Protocols – Timestamp Based Protocols- Validation- Based Protocols – Multiple Granularity.

Recovery and Atomicity

-Log – Based Recovery – Recovery with Concurrent Transactions – Buffer Management – Failure with loss of nonvolatile storage-Advance Recovery systems- Remote Backup systems.

UNIT - V:

Data on External Storage

-File Organization and Indexing – Cluster Indexes, Primary and Secondary Indexes – Index data Structures – Hash Based Indexing – Tree base Indexing – Comparison of File Organizations – Indexes and Performance Tuning- Intuitions for tree Indexes – Indexed Sequential Access Methods (ISAM) – B+ Trees: A Dynamic Index Structure.

Advanced Database Management System

Introduction to Distributed Database-Reference Architecture, fragmentation, Allocation, Joins

Text Books:
1. **Data base Management Systems**, Raghurama Krishnan, Johannes Gehrke, TATA McGrawHill 3rd Edition
2. **Data base System Concepts**, Silberschatz, Korth, McGraw hill, V edition.

Reference Books:
1. **Data base Systems design,** Implementation, and Management, Peter Rob & Carlos Coronel 7th Edition.
2. **Fundamentals of Database Systems,** Elmasri Navrate Pearson Education
3. **Introduction to Database Systems,** C.J.Date Pearson Education

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II Year - I Semester   **0**   **0-3-0**   **2**
(E2119) DATA STRUCTURES THROUGH C LAB
(Common to all branches)

EXPERIMENT 1.   Write a C program that uses functions to perform the following operations
                                  on singly linked list:
 I)   Creation II) Insertion III) Deletion IV) Traversal V) merge two single linked lists

EXPERIMENT 2.   Write a C program that uses functions to perform the following operations
                                  on doubly linked list.
 I)   Creation II) Insertion III) Deletion IV) Traversal
EXPERIMENT 3.   Write a C program that uses functions to perform the following operations
                                 on circular linked list:
 II)   Creation II) Insertion III) Deletion IV) Traversal

EXPERIMENT 4.   Write a C program that implement stack operations using
   I) Arrays   II) Linked Lists

EXPERIMENT 5.   I) Write a C program to convert infix expression to postfix expression using
                                 stack
    II) Write a C program to evaluate postfix expression

EXPERIMENT 6.   I) Programs using recursion
   II)   Write a C program to convert infix expression to prefix expression using stack

EXPERIMENT 7.   Write a C program to implement Linear queue using
    I) Arrays   II) Linked Lists

EXPERIMENT 8.   Write a C program to perform following operations on a circular Queue
       I) insertion II) deletion III) search and count

EXPERIMENT 9.   Write a C program to perform following operations on a circular DeQueue
   I)   insertion II) deletion III) search and count

EXPERIMENT 10. Write a C program to implement Linear search
    II) Write a C program to implement Binary Search

EXPERIMENT 11. Write C programs that implement the following sorting methods to sort a

given list of integers in ascending order:

I) Bubble sort II) Selection sort III) Insertion Sort

EXPERIMENT 12. Write C programs that implement the following sorting methods to sort a given list of integers in ascending order:

I) Merge sort   II) Quick sort

EXPERIMENT 13. I) Write a C Program to implement binary tree traversals

II) Write a C Program to implement AVL tree operations

EXPERIMENT 14. 1. Implementation of a Graph representation using Adjacency Matrix

2. Write a C program to implement graph traversals.

Text Books:
1. **C Programming & Data Structures**, B.A.Forouzan and R.F. Gilberg, Third Edition, Cengage Learning.
2. **Data Structures Using C** (Paperback) by Aaron M. Tenenbaum

Reference Books:
1. **C& Data structures** – P. Padmanabham, Third Edition, B.S. Publications.
2. **Data Structures using C** – A.M.Tanenbaum, Y.Langsam, and M.J. Augenstein, Pearson Education / PHI
3. **C Programming & Data Structures**, E. Balagurusamy, TMH.

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(E2120) DATA BASE MANAGEMENT SYSTEMS LAB
(Common for IT & CSE)

This lab enables the students to practice the concepts learnt in the subject DBMS by developing a database for an example company named "Roadway Travels" whose description is as follows. The student is expected to practice the designing, developing and querying a database in the context of example database "Roadway travels". Students are expected to use "Oracle" database. Roadway Travels "Roadway Travels" is in business since 1997 with several buses connecting different places in India. Its main office is located in Hyderabad.

The company wants to computerize its operations in the following areas:

- Reservations and Ticketing
- Cancellations Reservations & Cancellation: Reservations are directly handled by booking office. Reservations can be made 30 days in advance and tickets issued to passenger. One Passenger/person can book many tickets (to his/her family). Cancellations are also directly handed at the booking office. In the process of computerization of Roadway Travels you have to design and develop a Database which consists the data of Buses, Passengers, Tickets, and Reservation and cancellation details. You should also develop query's using SQL to retrieve the data from the database.

The above process involves many steps like

1. Analyzing the problem and identifying the Entities and Relationships
2. E-R Model
3. Relational Model
4. Normalization
5. Creating the database
6. Querying. Students are supposed to work on these steps week wise and finally create a complete "Database System" to Roadway Travels.

Examples are given at every experiment for guidance to students.

Experiment – 1.
E-R Model
Analyze the problem carefully and come up with the entities in it. Identify what data has to be persisted in the database. This contains the entities, attributes etc.
Identify the primary keys for all the entities. Identify the other keys like candidate keys, partial keys, if any

Example: Entities:
1. BUS
2. Ticket
3. Passenger

Relationships:
1. Reservation
2. Cancellation

PRIMARY KEY ATTRIBUTES:

1. Ticket ID (Ticket Entity)
2. Passport ID (Passenger Entity)
3. Bus_NO(Bus Entity)

Apart from the above mentioned entities you can identify more. The above mentioned are few.

Note:
The student is required to submit a document by writing the Entities and Keys to the lab teacher.
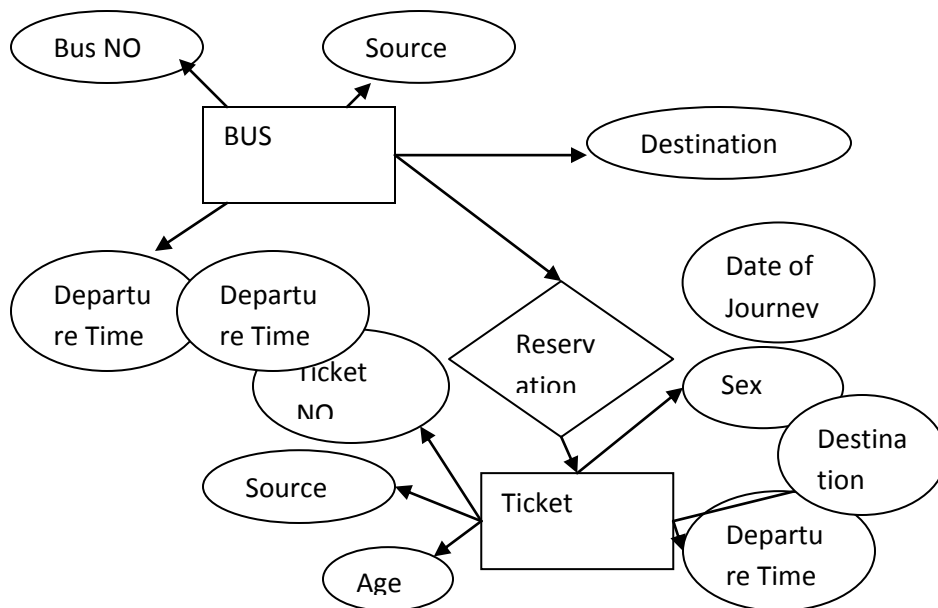
Experiment – 2.
Concept design with E-R Model
Relate the entities appropriately. Apply cardinalities for each relationship. Identify strong entities and weak entities (if any). Indicate the type of relationships (total / partial). Try to incorporate generalization, aggregation, specialization etc wherever required.

Example:
E-R diagram for bus

Note: The student is required to submit a document by drawing the E-R Diagram to the lab teacher.

Experiment – 3.
Relational Model
Represent all the entities (Strong, Weak) in tabular fashion. Represent relationships in a tabular fashion. There are different ways of representing relationships as tables based on the cardinality. Represent attributes as columns in tables or as tables based on the requirement. Different types of attributes (Composite, Multi-valued, and Derived) have different way of representation.

Example:
The passenger tables look as below. This is an example. You can add more attributes based on your E-R model. This is not a normalized table.
Passenger

Name	Age	Sex	Address	Passport ID
				Ticket_id

Note:
The student is required to submit a document by Represent relationships in a tabular fashion to the lab teacher.

Experiment – 4.

Normalization

Database normalization is a technique for designing relational database tables to minimize duplication of information and, in so doing, to safeguard the database against certain types of logical or structural problems, namely data anomalies. For example, when multiple instances of a given piece of information occur in a table, the possibility exists that these instances will not be kept consistent when the data within the table is updated, leading to a loss of data integrity. A table that is sufficiently normalized is less vulnerable to problems of this kind, because its structure reflects the basic assumptions for when multiple instances of the same information should be represented by a single instance only.

For the above table in the First normalization we can remove the multi valued attribute Ticket_id and place it in another table along with the primary key of passenger.

First Normal Form: The above table can be divided into two tables as shown below.

Passenger

Name	Age	Sex	Address	Passport ID

Passport ID	Ticket_id

You can do the second and third normal forms if required. Any how Normalized tables are given at the end.

Experiment - 5.

Installation of Mysql and Practicing DDL and DML commands

Installation of MySql. In this week you will learn Creating databases, How to create tables,

altering the database, dropping tables and databases if not required. You will also try truncate, rename commands etc.

Example for creation of a normalized "Passenger" table.
CREATE TABLE Passenger (Passport_id   INTEGER   PRIMARY KEY,
   Name VARCHAR (50) Not NULL,
   Age   Integer Not NULL,
   Sex   Char,
   Address VARCHAR (50) Not NULL);

Similarly create all other tables.

Note: Detailed creation of tables is given at the end.
 Insert data into the above tables.

DML commands are used to for managing data within schema objects. Some examples:

- SELECT - retrieve data from the a database
- INSERT - insert data into a table
- UPDATE - updates existing data within a table
- DELETE - deletes all records from a table, the space for the records remain

Inserting values into "Bus" table

Insert into Bus values (1234,'hyderabad', 'tirupathi');
Insert into Bus values (2345,'hyderabd','Banglore');
Insert into Bus values (23,'hyderabd','Kolkata');
Insert into Bus values (45,'Tirupathi,'Banglore');
Insert into Bus values (34,'hyderabd','Chennai');

Inserting values into "Passenger" table:

Insert into Passenger values (1, 45,'ramesh', 45,'M','abc123');
Insert into Passenger values (2, 78,'geetha', 36,'F','abc124');
Insert into Passenger values (45, 90,'ram', 30,'M','abc12');
Insert into Passenger values (67, 89,'ravi', 50,'M','abc14');
Insert into Passenger values (56, 22,'seetha', 32,'F','abc55');
Few more Examples of DML commands

Select * from Bus; (selects all the attributes and display)
UPDATE BUS SET Bus No = 1 WHERE BUS NO=2;

Experiment 6. Querying

In this week you are going to practice queries (along with sub queries) using ANY, ALL, IN, Exists, NOT EXISTS, UNION, INTERSECT, Constraints etc.

Practice the following Queries:

1. Display unique PNR_no of all passengers.
2. Display all the names of male passengers.
3. Display the ticket numbers and names of all the passengers.
4. Find the ticket numbers of the passengers whose name start with 'r' and ends with 'h'.
5. Find the names of passengers whose age is between 30 and 45.
6. Display all the passengers names beginning with 'A'
7. Display the sorted list of passengers names

Experiment – 7. Querying (continued...)

You are going to practice queries using Aggregate functions (COUNT, SUM, AVG, and MAX and MIN),

GROUP BY, HAVING and Creation and dropping of Views.

1. Write a Query to display the Information present in the Passenger and cancellation tables.
   Hint: Use UNION Operator.
2. Display the number of days in a week on which the 9W01 bus is available.
3. Find number of tickets booked for each PNR_no using GROUP BY CLAUSE.
   Hint: Use GROUP BY on PNR_No.
4. Find the distinct PNR numbers that are present.
5. Find the number of tickets booked by a passenger where the number of seats is greater than 1.
   Hint: Use   GROUP BY, WHERE and HAVING CLAUSES.
6. Find the total number of cancelled seats.
7. Display the details of passengers who travelled within the last 3 months.
8. Create a view for the details of passengers who cancelled their tickets.

Experiment – 8.
Create tables for the following schema. Student(snum: integer, sname: string, major: string, level: string, age: integer) Class(name: string, meets at: time, room: string, fid: integer) Enrolled(snum: integer, cname: string) Faculty(fid: integer, fname: string, deptid: integer)

Experiment – 9. Querying
1. Find the names of all Juniors (Level = JR) who are enrolled in a class taught by I.

Teacher.

2. Find the age of the oldest student who is either a History major or is enrolled in a course taught by I. Teacher.
3. Find the names of all classes that either meet in room R128 or have 5 or more students enrolled.
4. Find the names of all students who are enrolled in two classes that meet at the same time.
5. Find the names of faculty members who teach in every room in which some class is taught.
6. Find the names of faculty members for whom the combined enrollment of the courses that they teach is less than 5
7. Print the Level and the average age of students for that Level, for each Level.
8. Print the Level and the average age of students for that Level, for all Levels except JR. 9
9. Print the Level and the average age of students for that Level, whose average age is greater than 20.
10. Find the names of students who are enrolled in the maximum number of classes.
11. Find the names of students who are not enrolled in any class.
12. Count the number of junior level students.
13. Display all the students whose names starts with the letter "p".
14. Display all the teachers whose names contain letter 'a' or 'I' in their names.

Experiment – 10. PL/SQL Programs

1. Program to find sum of first 'n' natural no.s
2. Program to find reverse of a number
3. Insert the values of areas of a circle into a table called areas taking radius values from 2 to 8.

Experiment – 11. Cursors

In this week you need to do the following: Declare a cursor that defines a result set. Open the cursor to establish the result set. Fetch the data into local variables as needed from the cursor, one row at a time. Close the cursor when done.

Practice the following programs using cursors.

1. Write a cursor program to retrieve the details of all students using cursors (Use students table in experiment 9)
2. Write a PL/SQL block to update the level of students from JL to "junior Level" and SL to "senior Level" and insert a record in new level table.
3. Write a cursor program to display the details of Senior Level students.

Experiment – 12. Procedures

In this session you are going to learn Creation of stored procedure, Execution of procedure and modification of procedure. Practice procedures using the above database.

Eg: CREATE PROCEDURE myProc()
BEGIN
SELECT COUNT(Tickets) FROM Ticket WHERE age>=40;
End;

Experiment – 13. Triggers

In this week you are going to work on Triggers. Creation of insert trigger, delete trigger, update trigger. Practice triggers using the above database.

Eg: **CREATE TRIGGER updcheck BEFORE UPDATE ON passenger**
   FOR EACH ROW
   BEGIN
   IF NEW.TickentNO > 60 THEN
   SET New.Tickent no = Ticket no;
   ELSESET New.Ticketno = 0;
   END IF;
   END;

Text Books:
   1. **Introduction to SQL**,Rick F.Vander Lans,Pearson education.
   2. **Oracle PL/SQL**, B.Rosenzweig and E.Silvestrova,Pearson education.
Reference Books:
   1. **Oracle PL/SQL Programming**,Steven Feuerstein,SPD.
   2. **SQL & PL/SQL** for Oracle 10g,Black Book, Dr.P.S.Deshpande,Dream Tech.
   3. **Oracle Database ll** g PL/SQL Programming,M.Laughlin.TMH.

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(E2121) BASIC ELECTRICAL AND ELECTRONICS LAB
(Common to IT & CSE)
PART-A

EXPERIMENT I: Verification of KVL & KCL

EXPERIMENT:II   Verification of Thevinin's & Norton's Theorem

EXPERIMENT:III   Verification of Maximum power transfer theorem .Verification of DC & AC excitation with resistive & reactive loads.

EXPERIMENT:IV   Verification of superposition theorem & RMS value of complex wave

EXPERIMENT:V Verification of compensation theorem

EXPERIMENT:VI Verification of reciprocity & millman's theorem

EXPERIMENT:VII Series & parallel resonance - Timming, Resonant frequency, Bandwidth and Q-factor determination for RLC network

PART-B

EXPERIMENT:I PN Junction diode characteristics kit

EXPERIMENT:II Zener diode characteristics kit

EXPERIMENT:III Half wave rectifier with and without filters kit

EXPERIMENT:IV Full wave rectifier with and without filters kit

EXPERIMENT:V CE Characteristics kit

EXPERIMENT:VI CB Characteristics kit

EXPERIMENT:VII CE Amplifier

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(E2122) GENDER SENSITIZATION
(Common to all branches)

Unit-I – Gender: Why should we study it?, Socialization: Making women, Making Men, Introduction, Preparing For Womanhood, Growing up male, First lessons in caste, Different masculinities.

Unit-II- Women's Work: Its Politics and Economics,
Fact and fiction, Unrecognized and unaccounted work, Further reading: Wages and conditions of work, Domestic Violence: Speaking Out, Is home a safe place?, When women unite [Film], Rebuilding lives, Further reading: New forums for justice.

Unit-III–Just Relationships: Being Together as Equals,
Mary kom and Onler, Love and acid just do not mix, Love letters, Mothers and fathers, Further Reading: Rosa Parks – The brave heart.

Text Books:

1. Towards a world of equals by A.SuneethaSusicTharu publication Telugu academy Hyderabad

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II Year II- Semester	3	0-0-0	3

(E220A) MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS
(Common to ECE,EEE,CSE,IT & ECM)

Unit I

Introduction & Demand Analysis: Definition, Nature and Scope of Managerial Economics. Demand Analysis: Demand Determinants, Law of Demand and its exceptions. Elasticity of Demand: Definition, Types, Measurement and Significance of Elasticity of Demand. Demand Forecasting, Factors governing demand forecasting, methods of demand forecasting.

Unit II

Production & Cost Analysis: Production Function - Isoquants and Isocosts, MRTS, Least Cost Combination of Inputs, Cobb-Douglas Production function, Laws of Returns, Internal and External Economies of Scale. Cost Analysis: Cost concepts. Break-even Analysis (BEA)- Determination of Break-Even Point (simple problems) - Managerial Significance.

Unit III

Markets & New Economic Environment: Types of competition and Markets, Features of Perfect competition, Monopoly and Monopolistic Competition. Price-Output Determination in case of Perfect Competition and Monopoly. Pricing: Objectives and Policies of Pricing. Methods of Pricing. Business: Features and evaluation of different forms of Business Organisation: Sole Proprietorship, Partnership, Joint Stock Company, Public Enterprises and their types, New Economic Environment: Changing Business Environment in Post-liberalization scenario.

Unit IV

Capital Budgeting: Capital and its significance, Types of Capital, Estimation of Fixed and Working capital requirements, Methods and sources of raising capital - Capital Budgeting: features of capital budgeting proposals, Methods of Capital Budgeting: Payback Method, Accounting Rate of return (ARR) and Net Present Value Method -IRR(simple problems).

Unit V

Introduction to Financial Accounting & Financial Analysis: Accounting concepts and Conventions - Introduction IFRS - Double - Entry Book Keeping, Journal, Ledger, Trial Balance - Final Accounts (Trading Account, Profit and Loss Account and Balance Sheet with simple adjustments). Financial Analysis: Analysis and Interpretation of Liquidity Ratios, Activity Ratios, and Capital structure Ratios and Profitability ratios. Du Pont Chart analysis.

TEXT BOOKS:

1. Varshney&Maheswari: Managerial Economics, Sultan Chand, 2014.
2. S.A. Siddiqui & A.S. Siddiqui, Managerial Economics and Financial Analysis, New Age international Publishers, Hyderabad 2014.
3. M. Kasi Reddy &Saraswathi, Managerial Economics and Financial Analysis, PHI New Delhi, 2014.

REFERENCES:

1. Ambrish Gupta, Financial Accounting for Management, Pearson Education, New Delhi, 2012.
2. H. Craig Peterson & W. Cris Lewis, Managerial Economics, Pearson, 2012.
3. Lipsey&Chrystel, Economics, Oxford University Press, 2012.

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B.Tech. IT   **L**   **T-P-D**   **C**

II Year - II Semester   **4**   **1-0-0**   **4**

(E226A) OPERATING SYSTEMS
(Common to IT & CSE)

UNIT - I:

Operating System Overview

Overview of Computer Operating Systems, Operating System Functions, Protection and Security, Distributed Systems, Special Purpose Systems, Operating System Structures, Operating System Services and Systems Calls, Operating Systems Generation. **Process Management**: Process Concepts, Threads, Scheduling-Criteria, Algorithms Evaluation, Thread Scheduling.

UNIT - II:

Concurrency

Process Synchronization, Critical-Section Problem, Peterson's Solution, Synchronization Hardware, Semaphores, Classic Problems of Synchronization, Monitors, Synchronization examples, Atomic Transactions.

Memory Management

Swapping, Contiguous Memory Allocation, Paging, Page-Table Structure, Segmentation, Virtual Memory, Demand Paging, Page-Replacement Algorithms, Frames Allocation, Thrashing.

UNIT - III:

Principles of Deadlock

System Model, Deadlock Characterization, Deadlock Prevention, Detection and Avoidance, Recovery from Deadlock. File System Interface, File Concepts, Access Methods and Directory Structure, File System Mounting, File Sharing and Protection.

UNIT - IV:

File System Implementation

File System Structure, File System Implementation, Directory Implementation, Allocation Methods, Free-Space Management, Efficiency and Performance. Case Studies: UNIX, Linux and Windows.

Mass Storage Overview

Mass-Storage Structure, Disk Structure, Disk Attachment, Disk Scheduling, Swap-Space Management, RAID Structure, Stable-Storage Implementation, Tertiary Storage Structure.

UNIT - V:

Protection

Goals of Protection, Principles of Protection, Domain of Protection Access Matrix, Implementation of Access Matrix, Access Control, Revocation of Access Rights, Capability-Based Systems, Language-Based Protection.

Security

Security Problem, Program Threats, System and Network Threats Cryptography as a Security Tool, User Authentication, Implementing Security Defenses, Firewalling to protect Systems and Networks, Computer-Security Classifications, Case Studies: UNIX, Linux and Windows.

Advanced Operating Systems

Distributed Operating Systems, Multi-Processor Operating Systems, Real-Time Operating Systems and Mobile Operating Systems.

TEXT BOOKS:

1. **Operating System Concepts-Abraham Silberchatz**, Peter B. Galvin, Greg Gagne, 7th Edition, John Wiley.
2. **Operating Systems- A Concept based Approach**-D.M.Dhamdhere, 2nd Edition, TMH.

REFERENCE BOOKS:

1. **Principles of Operating Systems-Naresh Chauhan,** Oxford Higher Education.
2. **Operating System A Design Approach**-Crowley, TMH.
3. **Modern Operating Systems**-Andrew S Tanenbaum, 2nd Edition Pearson, PHI.

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II Year II- Semester   **4**   **1-0-0**   **4**

(E226B) OBJECT ORIENTED PROGRAMMING THROUGH JAVA
(Common to IT & CSE)

UNIT – I
Introduction: OOP concepts, history of Java, Java buzzwords, data types, variables, scope and life time of variables, arrays, operators, expressions, control statements, type conversion and casting, simple java program.

Classes and Objects: concepts of classes, objects, constructors, methods, this keyword, garbage collection, overloading methods and constructors, parameter passing, recursion.

String handling: String, StringBuffer, StringTokenizer.

UNIT – II
Inheritance: base class object, subclass, member access rules, super uses, using final with inheritance, method overriding, abstract classes
Interfaces: defining an interface, implementing interface, differences between classes and interfaces and extending interfaces.

Packages: Defining, creating and accessing a package, importing packages, access control, exploring package - java.io

UNIT – III
Exception handling: concepts of exception handling, benefits of exception handling, exception hierarchy, checked and unchecked exceptions, usage of-try, catch, throw, throws and finally, built in exceptions, creating own exception sub classes.

Multithreading: differences between multi-threading and multitasking, thread life cycle, creating threads, synchronizing threads, daemon threads, thread groups.

UNIT – IV
Applets: concepts of applets, differences between applets and applications, life cycle of applet, types of applets, creating applets, passing parameters to applets.

Event Handling: events, event sources, event classes, event listeners, delegation event model, handling mouse and key board events, adapter classes. The AWT class hierarchy, user interface components-labels, buttons, canvas, scrollbars, text components, checkbox, checkbox groups, choices, lists

UNIT – V
Layout manager: layout manager types-border, grid, flow, card and grid bag.

Swing: Introduction, limitations of AWT, components, containers, exploring swing- JApplet, JFrame and JComponent, Icons and Labels, Text fields, buttons – The JButton class, Checkboxes, Radio buttons, Combo boxes, Tabbed Panes, ScrollPanes, Trees and Tables.

TEXT BOOKS:

1. Java The complete reference, 8th editon, Herbert Schildt, TMH.
2. Under tanding OOP with Java, up dated edition, T.Budd, Pears on education.

REFERENCE BOOKS :

1. An Introduction to programming and OO design using Java, J. Nino and F.A. Hosch, John Wiley & sons.
2. An Introduction to OOP, second edition, T. Budd, pearson education.
3. Introduction to Java programming 6th edition, Y. Daniel Liang, pearson education

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B.Tech. IT	**L**	**T-P-D**	**C**
II Year - II Semester	**3**	**0-0-0**	**3**

(E225A) DESIGN AND ANALYSIS OF ALGORITHMS
(Common to IT,CSE & ECM)

UNIT - I:
Introduction
Algorithm, Pseudo Code for expressing Algorithms, Performance Analysis: Space Complexity, Time Complexity, asymptotic Notations: Big-oh Notation, Omega Notation, Theta Notation, Little-oh Notation. Disjoint Sets: Disjoint Set Operations, Union and Find Algorithms, Spanning Trees, Connected Components and Biconnected Components.

UNIT - II:
Divide and Conquer
General Method, Applications: Binary Search, Quick Sort, Merge Sort, Stassen's Matrix Multiplication.
Greedy Method
General Method Applications: Job Sequencing with Deadlines, 0/1 Knapsack Problem, Minimum Cost Spanning Trees: Prim's and Kruskal's Algorithms, Single Source Shortest Path Problem, Huffman Codes.

UNIT - III:
DynamicProgramming
General Method, Principle of Optimality, Applications: Multistage Graphs, Matrix Chain Multiplication, Optimal Binary Search Trees, 0/1 Knapsack Problem, All Pairs Shortest Path Problem, Travelling Sales Person Problem, Reliability Design.

UNIT - IV:
Backtracking
General Method, Applications: Nqueen Problem, Recursive Permutation Generator, Sum of Subsets Problem, Graph Coloring, Hamiltonian Cycles.

UNIT - V:
Branch and Bound
General Method, Applications: Travelling Sales Person Problem, 0/1 Knapsack Problem, LC Branch and Bound Solution, FIFO Branch and Bound Solution. NP-Hard and NP-Complete Problems: Basic Concepts, Non-Deterministic Algorithms, NP-Hard and NP-Complete Classes, Cook's Theorem.

TEXT BOOKS:

1. **Fundamentals of Computer Algorithms**-Ellis Horowitz, Satraj Sahni and Rajasekharam, Galgotia Publications Pvt. Ltd.

2. **Introduction to Algorithms**-T.H.Cormen, C.E.Leiserso, R.L.Rivest and C.Stein, 2nd Edition, Pearson Education, PHI Pvt. Ltd.

REFERENCE BOOKS:

1. **Algorithm Design: Foundations**, Analysis and Internet Examples-M.T.Goodrich and R.Tomassia, John Wiley and Sons.
2. **Introduction to Design and Analysis** of Algorithms A strategic Approach-R.C.T.Lee, S.S.Tseng, R.C.Chang and T.Tsai, Mc-Graw Hill.
3. **Design and analysis of Algorithms**-S. Sridhar, Oxford Higher Education.

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(E225B) COMPUTER NETWORKS
(Common to IT & CSE)

UNIT - I:

Overview of the Internet: Protocol, Layering Scenario, TCP/IP Protocol Suite: The OSI Model, Internet history standards and administration; Comparison of the OSI and TCP/IP reference model.

Physical Layer: Guided transmission media, wireless transmission media.

Data Link Layer - design issues, CRC codes, Elementary Data Link Layer Protocols, sliding window prorocol.

UNIT - II:

Multi Access Protocols - ALOHA, CSMA, Collision free protocols, Ethernet- Physical Layer, Ethernet Mac Sub layer, data link layer switching & use of bridges, learning bridges, spanning tree bridges, repeaters, hubs, bridges, switches, routers and gateways.

UNIT - III:

Network Layer: Network Layer Design issues, store and forward packet switching connection less and connection oriented networks-routing alhorithms-optimality principle, shortest path, flooding, Distance Vector Routing, Control to Infinity Problem, Hierarchical Routing, Congestion cointrol algorithms, admission control.

UNIT - IV:
Internetworking: Tunneling, Internetwork Routing, Packet fragmentation, IPv4, IPv6 Protocol, IP addresses, CIDR, IMCP, ARP, RARP, DHCP.

Transport Layer: Services provided to the upper layers elements of transport protocol-addressing connection establishment, connection release, Connection Release, Crash Recovery.

UNIT - V:
Transport Layer UDP-RPC, Real Time Transport Protocols, The Internet Transport Protocols-Introduction to TCP, The TCP Service Model, The TCP Segment Header, The Connection Establishment, The TCP Connection Release, The TCP Connection Management Modeling, The TCP Sliding Window, The TCP Congestion Control, The future of TCP.

Application Layer- Introduction, providing services, Applications layer paradigms, Client server model, Standard client-server application-HTTP, FTP, electronic mail, TELNET, DNS, SSH

Text books:

1. Data Communications and Networking - Behrouz A. Forouzan, Fifth Edition TMH, 2013.
2. Computer Networks - Andrew S Tanenbaum, 4th Edition, Pearson Education.

References books:

1. An Engineering Approach to Computer Networks - S. Keshav, 2nd Edition, Pearson Edication.
2. Understanding communications and Networks, 3rd Edition, W. A. Shay, Cengage Learning.
3. Introduction to Computer Networks and Cyber Security, Chwan-Hwa (John) Wu, J. David Irwin, CRC Press.

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II Year - II Semester   **0**   **0-3-0**   **2**

(E2218) OPERATING SYSTEMS LAB
(Common to IT & CSE)

EXPERIMENT 1:   Simulate the following CPU scheduling algorithms

a) Round Robin   b) SJF.

EXPERIMENT 2: Simulate the following CPU Scheduling algorithms

a) FCFS b) Priority.

EXPERIMENT 3: Simulate all file allocation strategies.

a) Sequential   b) Indexed c) Linked.

EXPERIMENT 4: Simulate MVT and MFT.

EXPERIMENT 5: Simulate the following File Organization Techniques

a) Single level directory b) Two level.

EXPERIMENT 6: Simulate the following File Organization Techniques

a) Hierarchical   b) DAG.

EXPERIMENT 7: Simulate Disk scheduling algorithms

a) FCFS b) SSTF c) SCAN d) C-SCAN e) LOOK.

EXPERIMENT 8: Simulate Bankers Algorithm for Dead Lock Avoidance.

EXPERIMENT 9: Simulate Bankers Algorithm for Dead Lock Prevention.

EXPERIMENT 10: Simulate all page replacement algorithms

a) FIFO   b) LRU   c) LFU Etc. …

EXPERIMENT 11: Simulate Paging Technique of memory management.

EXPERIMENT 12: Simulate on Allocation of Frames.

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B.Tech. IT **L** **T-P-D** **C**

II Year - II Semester **0** **0-3-0** **2**

(E2219) OBJECT ORIENTED PROGRAMMING THROUGH JAVA LAB
(Common to IT & CSE)

EXPERIMENT 1:
Write java programs that implement the following
a) Constructor   b) Parameterized constructor
c) Method overloading   d) Constructor overloading.

EXPERIMENT-2:
a) Write a Java program that checks whether a given string is a palindrome or not.
Ex: MADAM is a palindrome.
b) Write a Java program for sorting a given list of names in ascending order.
c) Write a Java Program that reads a line of integers, and then displays each integer and the sum of all the integers (Use StringTokenizer class of java.util

EXPERIMENT-3:
Write java programs that uses the following keywords
a) this   b) super
c) static   d) final

EXPERIMENT-4:
a) Write a java program to implement method overriding
b) Write a java program to implement dynamic method dispatch.
c)   Write a Java program to implement multiple inheritance.
d) Write a java program that uses access specifiers

EXPERIMENT-5:
a) Write a Java program that reads a file name from the user, then displays information about whether the file exists, whether the file is readable, whether the file is writable, the type of file and the length of the file in bytes.
b) Write a Java program that reads a file and displays the file on the screen, with a line number before each line.
c) Write a Java program that displays the number of characters, lines and words in a text file

EXPERIMENT-6:
 a) Write a Java program for handling Checked Exceptions.
b) Write a Java program for handling Unchecked Exceptions

EXPERIMENT-7:

a)Write a Java program that creates three threads. First thread displays "Good Morning" every one second, the second thread displays "Hello" every two seconds and the third thread displays "Welcome" every three seconds.

b)Write a Java program that correctly implements producer consumer problem using the concept of inter thread communication

EXPERIMENT-8:

a) Develop an applet that displays a simple message.

b) Develop an applet that receives an integer in one text field, and computes its factorial value and returns it in another text field, when the button named "Compute" is clicked

EXPERIMENT-9:

Write a Java program that works as a simple calculator. Use a grid layout to arrange button for the digits and for the +, -,*, % operations. Add a text field to display the result

EXPERIMENT-10:

a) Write a Java program for handling mouse events. b) Write a Java program for handling key events.

EXPERIMENT-11:

1. Write a program that creates a user interface to perform integer divisions. The user enters two numbers in the text fields Num1 and Num 2.

The division of Num1 and Num2 is displayed in the Result field when the Divide button is clicked. If Num1or Num2 were not an integer, the program would throw Number Format Exception. If Num2 were Zero, the program would throw an Arithmetic Exception and display the exception in a message dialog box.

EXPERIMENT-12:

a) Write a java program that simulates traffic light. The program lets the user select one of three lights: red, yellow or green. When a radio button is selected, the light is turned on, and only one light can be on at a time No l Light is on when the program starts.

b) Write a Java program that allows the user to draw lines, rectangles and ovals

EXPERIMENT-13:

Create a table in Table.txt file such that the first line in the file is the header, and the remaining lines correspond to rows in the table. The elements are separated by commas. Write a java program to display the table using JTable component

TEXT BOOKS:

1. Java;the complete reference,8th editon ,Herbert Schildt, TMH.
2. Java How to Program, Sixth Edition, H.M.Dietel and P.J.Dietel, Pearson Education/PHI.
3. Introduction to Java programming, Sixth edition, Y.Daniel Liang, Pearson Education.
4. Big Java, 2nd edition, Cay Horstmann, Wiley Student Edition, Wiley India Private Limited

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B.Tech. IT	L	T-P-D	C
II Year - II Semester	0	0-3-0	2

(E2220) COMPUTER NETWORKS LAB
(Common to IT & CSE)

EXPERIMENT 1:

Implement the data link layer farming methods such as character, character stuffing and bit stuffing.

EXPERIMENT 2 :

Implement on a data set of characters the three CRC polynomials - CRC 12, CRC 16 and CRC CCIP.

EXPERIMENT 3:

Implement Dijkstra's algorithm to compute the shortest path through a graph.

EXPERIMENT 4:

Take an example subnet graph with weights indicating delay between nodes. Now obtain Routing table at each node using distance vector routing algorithm.

EXPERIMENT 5:

Take an example subnet of hosts. Obtain broadcast tree for it.

EXPERIMENT 6:

Take a 64 bit playing text and encrypt the same using DES algorithm.

EXPERIMENT 7:

Write a program to break the above DES coding.

EXPERIMENT 8:

Using RSA algorithm Encrypt a text data and Decrypt the same.

EXPERIMENT 9:

Implementation of Hamming Code.

EXPERIMENT 10:

Simulation of Stop and wait protocol

EXPERIMENT 11:

Simulation of TCP client and server program

EXPERIMENT 12:

Using sniffing tool capture packets and analyze

TEXT BOOKS:

1. Data Communications and Networking - Behrouz A. Forouzan, Fifth Edition TMH, 2013.
2. Computer Networks - Andrew S Tanenbaum, 4th Edition, Pearson Education.

REFERENCES BOOKS:

1. An Engineering Approach to Computer Networks - S. Keshav, 2nd Edition, Pearson Edication.
2. Understanding communications and Networks, 3rd Edition, W. A. Shay, Cengage Learning.
3. Introduction to Computer Networks and Cyber Security, Chwan-Hwa (John) Wu, J. David Irwin, CRC Press.