

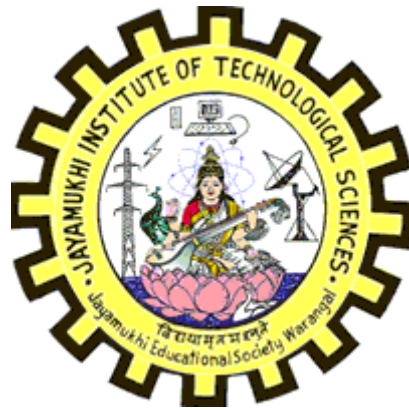
**COURSE STRUCTURE
AND
DETAILED SYLLABUS**

COLLEGE CODE: C4

**ELECTRICAL & ELECTRONICS
ENGINEERING**

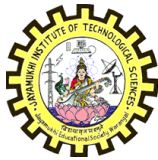
For

B.TECH. FOUR YEAR DEGREE COURSE
(Applicable for the batches admitted from 2015-2016)



**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)**

Narasampet, Warangal – 506 332
Telangana State, India



**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(AUTONOMOUS)**

NARSAMPET, WARANGAL – 506 332. T.S.

**Academic Regulations-2015 of B.Tech (Regular) Programme under
Choice Based Credit System (CBCS)**

(Effective for the students admitted into I-Year from the Academic year 2015-2016)

1. Award of B.Tech. Degree

A student will be declared eligible for the award of the B.Tech. Degree if he fulfills the following academic regulations:

- i. Pursued a course of study for not less than four academic years and not more than eight academic years.
- ii. Register for 192 credits and secure 186 credits with an exemption of 6 credits in elective subjects only.

Students, who fail to fulfill all the academic requirements for the award of the degree within eight academic years from the year of their admission, shall forfeit their seat in B.Tech course unless extension is granted by College Academic Council (CAC) to complete the course for a further period.

2. Courses of Study

The following courses of study are offered at B.Tech level:

Branch Code	Branch
01	Civil Engineering
02	Electrical & Electronics Engineering
03	Mechanical Engineering
04	Electronics & Communication Engineering
05	Computer Science & Engineering

3. Credit Courses:

All subjects/ courses are to be registered by a student in a semester to earn credits. Credits shall be assigned to each subject/course in a L:T:P:C (Lecture Periods: Tutorial Periods: Practical Periods: Credits) structure, based on the following table.

	For I-Year-I/II Semester		II,III,IV Years per Semester	
	Periods/Week	Credits	Periods/Week	Credits
Lecture	04	04	04	04
	03	03	03	03
	02	02	02	02
Tutorial	02	01	02	01
Practical	03	02	03	02
Drawing	02T & 04D	04	03	02
Mini Project	-	-	-	04
Comprehensive Viva Voce	-	-	-	04
Seminar	-	-	02	04
Major Project	-	-	15	08

4. Subject/Course Classification:

All the Subjects/Courses offered for the B.Tech are broadly classified as (a) Foundation Courses (FC), (b) Core Courses (CC) and (c) Elective Courses (EC).

- i. Foundation Courses (FC) are further categorized as
 - a. BSH (Basic Sciences, Humanities and Social Sciences),
 - b. ES (Engineering Sciences).
- ii. Core Courses (CC) and Elective Courses (EC) are categorized as PS (Professional Subjects), which are further subdivided as
 - a. PC (Professional/Departmental Core) subjects,
 - b. PE (Professional/Departmental Elective)
 - c. OE (Open Electives)
 - d. PW (Project Work)
- iii. Minor Courses (1 or 2 Credit Courses, belonging to BSH/ES/PC as per relevance); and
- iv. Mandatory Courses (MC-non-credit oriented).

4.1 Course Nomenclature:

The Curriculum Nomenclature or Course-Structure Grouping for B.Tech programme is given below:

S. No	Broad Course Classification	Course Group/Category	Course Description	Range of Credits
1.	Foundation Courses (FC)	BSH-Basic Sciences, Humanities and Social Sciences	Includes-Mathematics, Physics and Chemistry subjects and subjects related to Humanities, Social Sciences and Management	20%-30%
2.		ES-Engineering Sciences	Includes fundamental engineering subjects	15%-20%
3.	Core Courses (CC)	PC-Professional Core	Includes core subjects related to the parent Discipline/ Department / Branch of Engineering	35%-40%
4.	Elective Courses (EC)	PE-Professional Electives	Includes Elective subjects related to the Parent Discipline/ Department/Branch of Engineering	10%-15%
5.		OE-Open Electives	Elective subjects which include inter-disciplinary subjects or subjects in an area outside the parent Discipline/Department /Branch of Engineering	5%-20%
6.	Core Courses	PW-Project Work	B.Tech. Major Project Work	10%-15%
7.		Mini-Project	Industrial Oriented Training/ Internship /Mini-Project	
8.		Seminar	Seminar based on core contents related to parent Discipline/ Department/Branch of Engineering	
9.		Minor Courses	1 or 2 Credit Courses (Subset of BSH)	Included
10.		Mandatory Courses (MC)	Mandatory Courses (Non-Credit)	-
Total Credits for B.Tech. Programme				192 (100%)

5. Course Registration:

- 5.1 Each student, on admission shall be assigned to a Faculty Advisor/Counselor who shall advise her/him about the academic programmes and counsel on the choice of courses in consideration with the academic background and student's career objectives.
- 5.2 Faculty advisor shall be only from the engineering departments. With the advice and consent of the Faculty Advisor the student shall register for a set of courses he/she plans to take up for each Semester.
- 5.3 The student should meet the criteria for prerequisites to become eligible to register for that course.
- 5.4 A student shall be permitted to register the prescribed credits per semester with a variation of ± 4 credits excluding Laboratories/Seminar/Project. However, registration for Repeat courses of previous semesters (Odd to Odd and Even to Even semesters) is allowed in excess of this limit.
- 5.5 If a student finds that he/she has registered for more courses than possible to study in a semester, he/she can drop one or more courses before the end of 3rd week of the semester.
- 5.6 A student is allowed to register for more than 192 credits in completion of B.Tech programme. However, additional credits scored shall not be considered for award of division and also not considered for calculation of Semester Grade Point Average (SGPA) and Cumulative Grade Point Average (CGPA). For such extra subject(s) registered a letter grade alone will be indicated in the Grade card as a performance measure.

6. Subjects / Courses to be offered:

- 6.1 Students shall have to register for the courses during the preparation and practical examinations of the previous semester. However for the first year, the students have to register for courses one week after the commencement of class work.
- 6.2 The maximum number of students to be registered in each course shall depend upon the physical facilities available.
- 6.3 The information on list of all the courses offered in every department specifying the credits, the prerequisites, a brief description of syllabus or list of topics and the time slot shall be made available to the student in time.
- 6.4 In any department, preference for registration shall be given to those students of that department for whom the course is a core course.
- 6.5 The registration for the inter departmental and/or open elective courses shall be on first come first served basis, provided the student fulfills prerequisites for that course, if any. The number of students to be registered shall be based on the class room and laboratory capacity. Every effort shall be made by the Department/Centre to accommodate as many students as possible.
- 6.6 More than one teacher may offer the same course in any semester.
- 6.7 No course shall be offered unless there is a minimum of 20 students or one third of the class strength specified.

7. Programme Pattern:

- i. The entire course of study is of four academic years. All years shall be on semester pattern i.e two semesters per year. For each semester there shall be a minimum of 90 instruction days.

- ii. A student is eligible to appear for the end examination in a subject, but absent at it or has failed in the end examination may appear for that subject at the supplementary examination.
- iii. There shall be no branch transfers after the completion of admission process.

8. Distribution and Weightage of Marks:

- 8.1 The Performance of a student in each semester shall be evaluated subject-wise with a maximum of 100 marks for theory and 100 marks for practical subjects. In addition, Industry oriented mini-project, Seminar, Comprehensive Viva-Voce and Major Project Work shall be evaluated for 100, 100, 100 and 200 marks respectively.
- 8.2 For theory subjects the distribution shall be 30 marks for Internal Evaluation and 70 marks for the End-Examination.
- 8.3 For theory subjects, during the semester there shall be 2 mid-term examinations (internal exams) and two assignments carrying 5 marks each.
- 8.4 Each mid-term examination of 90 minutes consists of Part-A (objective type) for 10 marks and Part-B (subjective paper) for 15 marks. Mid-term examination paper shall contain 5 questions out of which the student has to answer 3 questions of each 5 marks. First mid-term examination shall be conducted for first 2.5 units (50%) of syllabus and second mid-term examination shall be conducted for remaining 2.5 units (50%) of syllabus. Objective type may be with multiple choice questions, true/false, match type questions, fill in the blanks etc.
- 8.5 First Assignment should be submitted before the conduct of the first mid-term examination and the second Assignment should be submitted before the conduct of the second mid-term examination. The assignments shall be as specified by the concerned subject teacher.
- 8.6 The first mid-term examination marks and first assignment marks make first set of internal evaluation and second mid-term examination marks and second assignment marks make second set of internal evaluation marks, and the better of these two sets of marks shall be taken as the final mid-term marks secured by the student towards internal evaluation in that theory subject.
- 8.7 If a student is absent for any test/assignment, he is awarded zero marks for that test/assignment. However a candidate may be permitted on genuine grounds provided he has taken permission before the mid-term examinations from the Head of the Department. Moreover he has to apply for makeup examinations within a week after completion of mid-term examinations. A subcommittee will be constituted by the College Academic Council to look into such cases. The subcommittee constituted by the College Academic Council may conduct improvement for the internal examinations for theory subjects for the interested candidates.
- 8.8 The details of the Question Paper pattern for theory examination is as follows:
 - (i) The end semesters exam will be conducted for 70 Marks which consist of two parts viz. Part-A for 20 Marks and Part-B for 50 Marks.

- (ii) Part-A is compulsory question which consist of 5 Sub-questions, one from each unit, carrying 4 Marks each.
 - (iii) Part-B consist of 5 questions (numbered from 2 to 6) carrying 10 marks each. Each of these questions, there will be an either or choice(i.e There will be two questions from each unit and student will answer any one question).
- 8.9 For practical subjects there shall be a continuous internal evaluation during the semester for 30 sessional marks and 70 end examination marks. Out of the 30 sessional marks, day-to-day work in the laboratory shall be evaluated for 20 marks and internal examination for practical shall be evaluated for 10 marks conducted by the concerned laboratory teacher. The end examination shall be conducted with one external examiner and one internal examiner. The external examiner shall be appointed from the panel of examiners as recommended by the Board of Studies in respective Branches.
- 8.10 For the subject having design and/or drawing, (such as Engineering Graphics Engineering Drawing, Machine Drawing) and estimation, the distribution shall be 30 marks for internal evaluation (20 marks for day-to-day work and 10 marks for internal test) and 70 marks for end examination.
- 8.11 There shall be a mini project preferably suggested by the industry of their specialization, to be taken up during the vacation after III year II semester examination. However, the mini project and its report shall be evaluated in IV Year I-Semester. The mini project shall be submitted in a report form and should be presented before the committee, which shall be evaluated for 100 marks. The committee consists of an External Examiner, Head of the Department, Supervisor of mini project and a senior faculty member of the department. There shall be no internal marks for mini project.
- 8.12 There shall be a seminar presentation in IV year II semester. For the seminar, the student shall collect the information on a specialized topic and prepare a technical report, showing his understanding over the topic, and submit to the department, which shall be evaluated by the departmental committee consisting of Head of the Department, seminar supervisor and a senior faculty member. The seminar report and presentation shall be evaluated for 100 marks. There shall be no external examination for seminar.
- 8.13 There shall be comprehensive Viva-Voce in IV Year II-Semester. The Comprehensive Viva-Voce will be conducted by a Committee consisting of (i) Head of the Department (ii) two Senior Faculty Members of the Department. The Comprehensive Viva-Voce is aimed to assess the student's understanding in various subjects he/she studied during the B.Tech Programme. The Comprehensive Viva-Voce is evaluated for 100 marks by the Committee. There are no internal marks for the Comprehensive Viva-Voce.
- 8.14 Out of a total of 200 marks for the major project work, 60 marks shall be for internal evaluation and 140 marks for the end semester examination. The end semester examination (Viva-Voce) shall be conducted by a committee. The committee consists of an External Examiner, Head of the Department and the Project Supervisor. The internal evaluation shall be on the basis of two seminars given by each student on the topic of his major project.

8.15 The topics for industry oriented mini project, seminar and major project work shall be different from each other.

9. Attendance Requirements:

- 9.1 A student shall be eligible to appear for the end examinations if he acquires a minimum of 75% of aggregate attendance in all the subjects.
- 9.2 Condonation of shortage of attendance in each subject up to 10% on genuine grounds in each semester may be granted by the College Academic Council on recommendation by the Principal.
- 9.3 Shortage of attendance below 65% shall in no case be condoned.
- 9.4 Student falling short of attendance as specified above will be detained.
- 9.5 A student will not be promoted to the next semester unless he satisfies the attendance requirement of the present semester. They may seek re-admission for that semester when offered next. They may seek re-registration for all those subjects registered in that semester in which he got detained, by seeking re-admission for that semester as and when offered; in case 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. A stipulated fee decided by the College Academic Council shall be payable towards condonation of shortage of attendance.

10. Minimum Academic Requirements:

The following academic requirements have to be fulfilled in addition to the attendance requirements mentioned in item no.09.

- 10.1 A student shall be deemed to have fulfilled the minimum academic requirements and earned the credits allotted to each theory or practical or design or drawing subject or project if he secures not less than 35% of marks in the end examination and a minimum of 40% of marks in the sum total of the internal evaluation and end examination taken together.
- 10.2 A student shall be promoted from I Year to II Year unless he fulfills the minimum academic requirements of 24 credits out of 48 credits of I Year from all examinations and secures prescribed minimum attendance in I Year.
- 10.3 A student shall be promoted from II year to III year only if he fulfills the academic requirement of 36 credits out of 72 credits from one regular and one supplementary examinations of I Year and one regular and one supplementary examination of II year I semester irrespective of whether or not the candidate takes the examination and secures prescribed minimum attendance in II Year II Semester.
- 10.4 A student shall be promoted from III year to IV year only if he fulfills the academic requirements of 60 credits out of 120 credits secured from all the examinations both regular and supplementary conducted up to end of III Year I semester irrespective of whether or not the candidate takes the examination and secures prescribed minimum attendance in III Year II Semester
 - a) Two regular and two supplementary examinations of I Year
 - b) Two regular and two supplementary examinations of II Year I semester
 - c) Two regular and one supplementary examinations of II Year II Semester.
 - d) One regular and one supplementary examination of III Year I semester.

- 10.5 A student should earn all credits with an exemption of 8 credits in elective subjects. The marks obtained in the subjects excluding the subjects exempted shall be considered for the final calculation of CGPA and SGPA.
- 10.6 Student who fails to earn credits with an exemption of 8 credits as indicated in the Programme structure within 8 academic years from the year of admission shall forfeit his seat in B.Tech. Programme unless an extension is given by College Academic Council to complete the Programme for a further period of 2 years.
- 10.7 A student shall register for all subjects covering 192 credits as specified and listed (with the relevant course/subjects classifications as mentioned) in the course structure, put up all the attendance and academic requirements and securing a minimum of P Grade (Pass Grade) or above in each subject, and earn 184 credits securing Semester Grade Point Average (SGPA) ≥ 4.5 in each semester, and Cumulative Grade Point Average (CGPA) ≥ 4.5 at the end of each successive semester, to successfully complete the B.Tech Programme.
- 10.8 When a student is detained due to shortage of attendance in any semester, he may be re-admitted into that semester, as and when offered, with the Academic Regulations of the batch into which he gets readmitted. However, no grade allotments of SGPA/CGPA calculations will be done for that entire semester in which he got detained.
- 10.9 When a student is detained due to lack of credits in any year, he may be readmitted in the next year, after fulfillment of the academic requirements, with the academic regulations of the batch into which he gets readmitted.
- 10.10 A student is eligible to appear in the end semester examination in any subject/course, but absent at it or failed (thereby failing to secure P Grade or above), may reappear for that subject/course at the supplementary examinations as and when conducted. In such cases, his internal marks assessed earlier for that subject/course will be carried over, and added to the marks to be obtained in the supplementary examination, for evaluating his performance in that subject.

11. Grading Procedure

- 11.1 Marks will be awarded to indicate the performance of each student in each Theory Subject, or Lab/Practicals or Seminar or Project or Mini-Project, Minor Course etc., based on the % of marks obtained in End examination, both taken together as specified in item no. 07 above and a corresponding Letter Grade shall be given.
- 11.2 As a measure of the student's performance, a 10-point Absolute Grading System using the following Letter Grades (UGC Guidelines) and corresponding percentage of marks shall be followed.

Grades and Grade Points

% of Marks obtained in a Course	Letter Grade	Grade Point
≥ 80 to 100	O (Outstanding)	10
≥ 70 to < 80	A+ (Excellent)	9
≥ 60 to < 70	A (Very Good)	8
≥ 55 to < 60	B+(Good)	7

>=50 to < 55	B (Above Average)	6
>=45 to < 50	C (Average)	5
>=40 to < 45	P (Pass)	4
Less than 40	F (Fail)	0
0	Ab (Absent)	0

- 11.3 A student obtaining ‘F’ Grade in any subject shall be considered ‘failed’ and will be required to reappear as ‘Supplementary Candidate’ in the End Semester Examination, as and when offered. In such cases, his Internal Marks in those Subject(s) will remain same as those he obtained earlier.
- 11.4 A Letter Grade does not imply any specific % of Marks.
- 11.5 In general, a student shall not be permitted to repeat any Subject/Course(s) only for the sake of ‘Grade Improvement’ or ‘SGPA/CGPA Improvement’. However, he has to repeat all the Subjects/Courses pertaining to the Semester, when he is detained (as listed in Item No. 10.8-10.9).
- 11.6 A student earns Grade Point (G.P.) in each Subject/Course, on the basis of the Letter Grade obtained by him in that Subject/Course (excluding Mandatory non-credit Courses). Then the corresponding ‘Credit Points’ (C.P.) are computed by multiplying the Grade Point with Credit Points (C.P.) for that particular Subject/Course.
- Credit points (C.P.) = Grade Points (G.P.) X Credits For a Course**
- 11.7 The student passes the Subject/Course only when he gets G.P.≥4 (P Grade or above).
- 11.8 The Semester Grade Point Average (SGPA) is calculated by dividing the Sum of Credit Points ($\sum C.P.$) Secured from All Subjects/Courses registered in a semester, by the total number of credits registered during that semester. SGPA is rounded off to Two Decimal Places. SGPA is thus computed as

$$\left\{ \sum_{i=1}^N c_i G_i \right\} / \left\{ \sum_{i=1}^N c_i \right\} \quad \dots \text{ For each semester}$$

Where ‘i’ is the subject indicator index (taken into account all subjects in a semester), ‘N’ is the number of subjects ‘REGISTERED’ for the Semester (as specifically required and listed under the Course Structure of the parent Department), and C_i is the number of Credits allotted to the i^{th} subject and G_i represents the Grade Points (G.P.) corresponding to the Letter Grade awarded for that i^{th} Subject.

- 11.9 The Cumulative Grade Point Average (CGPA) is a measure of the overall cumulative performance of a student over all Semesters considered for registration. The CGPA is the ratio of the Total Credit Points secured by a student in all registered Courses (with an exemption of 8 credits in electives subjects) in all semesters. CGPA is rounded off to two decimal places. CGPA, is thus computed from the I year, Second- Semester onwards, at the end of each semester, as per the formula.

$$\left\{ \sum_{j=1}^M c_j G_j \right\} / \left\{ \sum_{j=1}^M c_j \right\} \quad \dots \text{ for all ‘S’ semesters registered}$$

(i.e., upto and inclusive of ‘S’ semester, $S \geq 2$)

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’ from the 1st Semester onwards upto and inclusive of the semester S (obviously $M > N$), ‘j’ is the subject indicator index takes into account all subjects from 1 Subject and G_j represents the Grade Points (GP) corresponding to the Letter Grade awarded for that j^{th} subject. After registration and completion of I year I semester however, the SGPA of that Semester itself may be taken as the CGPA, as there are no cumulative effects.

- 11.10 For Merit Ranking or Comparison purpose or any other listing only the rounded off values CGPAs will be used.

- 11.11 For calculation listed in item no.10.6-10.10, 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.

12. Passing Standards:

- 12.1 A student shall be declared successful or 'passed' in a Semester only when he gets a $SGPA \geq 4.5$ (at the end of that particular Semester); and a student shall be declared successful or 'passed' in the B.Tech Programme, only when he gets a $CGPA \geq 4.5$; subject to the condition that he secures a $GP \geq 4$ (P Grade or above) in every registered Subject/Course in each Semester (during the B.Tech Programme) for the Degree Award, as required.
- 12.2. In spite of securing P Grade or above in some (or all) Subjects/Courses in any Semester, if a Student receives a $SGPA < 4.5$ and /or $CGPA < 4.5$ at the end of such a Semester, then he may be allowed on the following specific recommendations of the Head of the Department and subsequent approval from the Principal.
- i.) To go into the next subsequent Semester (Subject to fulfilling all other attendance and academic requirements as listed under items no.9-10);
- ii.) To 'improve his SGPA of such a Semester (and hence CGPA to 4.5 or above', by reappearing for one or more as per student's choice or the same subject (s)/courses(s) in which he has secured P Grade (s) in that semester, at the supplementary examinations to be held in the next subsequent semester(s).
- In such cases, his internal marks in those subject(s) will remain same as those he obtained earlier. The newly secured letter grades will be recorded and taken into account for calculation of SGPA and CGPA, only if there is an improvement.
- 12.3. A Student shall be declared successful or 'passed' in any Mandatory (non-credit) Subject /Course, if he secures a 'Satisfactory Participation Certificate' for that course.
- 12.4 After the Completion of each 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, Number of Credits, Grade earned etc.), credits earned, SGPA and CGPA.

13. Declaration of Results:

- 13.1 Computation of SGPA and CGPA are done using the procedure listed in item no.10.6 – 10.10.
- 13.2 For Final % of Marks equivalent to the computed final CGPA, the following formula may be used:

$$\text{\% of Marks} = (\text{Final CGPA} - 0.5) \times 10$$

14. Award of Degree under CBCS:

- 14.1 A student will be declared eligible for the award of the B.Tech. Degree if he fulfills the following academic regulations:
1. Pursued a course of study for not less than four academic years and not more than eight academic years.
 2. Register for 192 credits and secure 184 credits with an exemption of 8 credits in elective subjects only.
 3. Secures Cumulative Grade Point Average (CGPA) ≥ 4.5 .

4. Students, who fail to fulfill all the academic requirements for the award of the degree within eight academic years from the year of their admission, shall forfeit their seat in B.Tech course unless extension is granted for a further period by College Academic Council (CAC) to complete the course.

14.2 A student who qualifies for the Award of the Degree as listed in **item 13.1** shall be placed in the following classes.

Award of Division:

S.No	Division	CGPA
1	First Class with Distinction	≥ 7.5
2	First Class	≥ 6.5 but less than 7.5
3	Second Class	≥ 5.5 but less than 6.5
4	Pass Class	≥ 4.5 but less than 5.5

14.3 A student with final CGPA (at the end of the Course) < 4.5 will not be eligible for the Award of the Degree.

15. Withholding of Results:

If the student has not paid fees to University/College at any stage or has pending dues against his name due to any reason whatsoever, or if any case of indiscipline is pending against him, the result of the student may be withheld, and he will not be allowed to go into the next higher semester. The Award or issue of the Degree may also be with held in such cases.

16. Transitory Regulations:

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 readmission to the same subject/course (or equivalent subjects/courses, as the case may be), and same Professional Electives/Open Electives (or from set/category of electives or equivalents suggested, as the case may be) as and when they are offered (within the time-frame of 8 years from the date of commencement of his I year I Semester).

17. General:

- i. Where the words “he”, “him”, “his”, occur in the regulations, they include “she”, “her”, “hers”.
- ii. Where the words “subject” or “subjects”, occur in these regulations, they also imply “course” or “courses”.
- iii. The academic regulations should be read as a whole for the purpose of any interpretation.
- iv. In case of any doubt or ambiguity in the interpretation of the above rules, the decision of the Chairman, College Academic Council is final.

Note: *The College may change or amend the academic regulations or syllabi at any time and the changes or amendments made shall be applicable to all the students with effect from the dates notified by the College Authorities.*

Academic Regulations for B.Tech. (Lateral Entry Scheme)

(Effective for the students getting admitted into II-Year from the academic year 2016-2017 and on wards)

1. The students have to acquire all credits (Total 144) from II to IV year of B.Tech. Program (Regular) for the award of the degree. Register all credits and secure all credits with the exemption of 6 credits in elective subjects.
2. Student, who fails to fulfill the requirements for the award of the degree in six consecutive academic years from the year of admission, shall forfeit his seat unless extension is granted by the College Academic Council to complete the Programme for a further period.
3. The same attendance regulations are to be adopted as that of B.Tech. (Regular).

4. Promotion Rule:

- i. A Student shall be promoted from II Year to III Year if he fulfills the minimum academic requirements of 24 credits out of 48 credits of II Year from all examinations and secures prescribed minimum attendance in II Year.
 - ii. A student shall be promoted from III year to IV year only if he fulfills the academic requirements of 36 credits out of 72 credits secured from the following examinations, whether the candidate takes the examination or not, and secure prescribed minimum attendance in III Year II Semester.
 - a) Two regular and Two Supplementary examinations of II Year I Semester
 - b) Two regular and one supplementary examinations of II Year II Semester.
 - c) One regular and one supplementary examination of III Year I Semester.
5. All other regulations as applicable for B.Tech. IV year degree course (Regular) will hold good for B.Tech. (Lateral Entry Scheme)

Note: The College may change or amend the academic regulations or syllabi at any time and the changes or amendments made shall be applicable to all the students with effect from the dates notified by the College Authorities.

MALPRACTICES RULES
DISCIPLINARY ACTION FOR / IMPROPER CONDUCT IN EXAMINATIONS

	Nature of Malpractices/Improper Conduct	Punishment
	<i>If the candidate:</i>	
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 he is appearing but has not made use of (material shall include any marks on the body of the candidate which can be used as an aid in 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 candidate orally or by any other body language methods or communicates through cell phones with any candidate or persons in or outside the exam hall in respect of any matter.	Expulsion from the examination hall and cancellation of the performance in that subject only of all the candidates 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 candidate is appearing.	Expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted to appear for the remaining examinations of the subjects of that Semester. The Hall Ticket of the candidate is to be cancelled.
3.	Impersonates any other candidate in connection with the examination.	The candidate who has impersonated shall be expelled from examination hall. The candidate is also debarred and forfeits the seat. The performance of the original candidate, who has been impersonated, shall be cancelled in all the subjects of the examination (including practicals and project work) already appeared and shall not be allowed to appear for examinations of the remaining subjects of that semester/year. The candidate is also debarred for two consecutive semesters from class work and all University examinations. The continuation of the course by the candidate is subject to the academic regulations in connection with forfeiture of seat. If the imposter is an outsider, he will be handed over to the police and a case is registered against him.
4.	Smuggles in the Answer book or additional sheet or takes out or arranges to send out the question paper during the examination or answer book or	Expulsion from the examination hall and cancellation of performance in that subject and all the other subjects the candidate has already appeared including

	additional sheet, during or after the examination.	practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester/year. The candidate is also debarred for two consecutive semesters from class work and all University examinations. The continuation of the course by the candidate 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 organizes 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 written or by signs or by visible representation, assaults the officer-incharge, 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 disrupt the 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 candidate(s) has (have) already appeared and shall not be permitted to appear for the remaining examinations of the subjects of that semester/year. The candidates 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 part 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 candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester/year. The candidate is also debarred for two consecutive semesters from class work and all University examinations. The continuation of the course by the candidate 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 the performance in that

		subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester/year. The candidate is also debarred and forfeits the seat.
9.	If student of the college, who is not a candidate 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 other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester/year. The candidate is also debarred and forfeits the 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 the performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester.
11.	Copying detected on the basis of internal evidence, such as, during valuation or during special scrutiny.	Cancellation of the performance in that subject and all other subjects the candidate has appeared including practical examinations and project work 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.	

**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)**

ELECTRICAL & ELECTRONICS ENGINEERING

COURSE STRUCTURE

(Applicable from the batch admitted from 2015-16 onwards)

I YEAR			I SEMESTER			
S.No.	Code	Subject	L	T	P	Credits
1	AJ1001	Mathematics- I	4	0	0	4
2	AJ1013	English	3	0	0	3
3	AJ1008	Engineering Physics	4	0	0	4
4	AJ1010	Engineering Chemistry	3	0	0	3
5	AJ1303	Engineering Graphics	2	0	4	4
6	AJ1014	English Language Communication Skills Lab	0	0	3	2
7	AJ1011	Physical Sciences Lab	0	0	3	2
8	AJ1307	Engineering Workshop & IT Work Shop	0	0	3	2
Total			16	0	13	24

I YEAR			II SEMESTER			
S.No.	Code	Subject	L	T	P	Credits
1	AJ2002	Mathematics – II	3	1	0	4
2	AJ2012	Environmental Studies	3	0	0	2
3	AJ2004	Numerical Methods	3	0	0	2
4	AJ2201	Electrical Circuits – I	3	1	0	4
5	AJ2401	Basic Electronics Engineering	4	1	0	4
6	AJ2501	Problem solving and Computer Programming	4	0	0	4
7	AJ2402	Basic Electronics Lab	0	0	3	2
8	AJ2502	Problem solving and Computer Programming Lab	0	0	3	2
Total			20	3	6	24

**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
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COURSE STRUCTURE

(Applicable from the batch admitted from 2015-16 onwards)

II YEAR			I SEMESTER			
S.No.	Code	Subject	L	T	P	Credits
1	AJ3003	Mathematics-III	4	0	0	4
2	AJ3205	Electromagnetic fields	3	1	0	3
3	AJ3206	Electrical circuits-II	4	1	0	4
4	AJ3208	Electrical Machines-I	4	1	0	4
5	AJ3508	OOP & Data Structures	3	0	0	3
6	AJ3207	Electrical Circuits Lab	0	0	3	2
7	AJ3509	OOP & Data Structures Lab	0	0	3	2
8	AJ3209	Electrical Machines-I Lab	0	0	3	2
Total			18	3	9	24
9	AJMC02	*Value Education ,Human Rights and Legislative Procedures	3	0	0	0

II YEAR			II SEMESTER			
S.No.	Code	Subject	L	T	P	Credits
1	AJ4210	Power systems-I	4	0	0	4
2	AJ4211	Electrical Machines-II	4	1	0	4
3	AJ4404	Switching Theory and Logic Design	3	1	0	3
4	AJ4417	IC Applications	3	0	0	3
5	AJ4110	Fluid Mechanics and Hydraulic Machinery	4	0	0	4
6	AJ4112	Fluid Mechanics and Hydraulic Machinery Lab	0	0	3	2
7	AJ4246	Basic Electrical Simulation Lab	0	0	3	2
8	AJ4421	IC & HDL Simulation Lab	0	0	3	2
Total			18	2	9	24
9	AJMC01	*Gender Sensitization	0	0	3	0

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

ELECTRICAL & ELECTRONICS ENGINEERING
COURSE STRUCTURE

(Applicable from the batch admitted from 2015-16 onwards)

III YEAR			I SEMESTER			
S.No.	Code	Subject	L	T	P	Credits
1	AJ5214	Control Systems	4	1	0	4
2	AJ5216	Power system-II	3	1	0	3
3	AJ5217	Electrical Machines-III	4	1	0	4
4	AJ5219	Power Electronics	3	1	0	3
5		Open Elective-I	3	0	0	3
6	AJ5220 AJ5221 AJ5222	Professional Elective-I 1. Renewable Energy Sources 2. Energy Storage Systems 3. Electrical Engineering Materials	3	0	0	3
7	AJ5215	Control Systems Lab	0	0	3	2
8	AJ5218	Electrical Machines-II Lab	0	0	3	2
Total			20	4	6	24

III YEAR			II SEMESTER			
S.No.	Code	Subject	L	T	P	Credits
1	AJ6223	Switch Gear and Protection	4	0	0	4
2	AJ6224	Power Semi conductor Drives	4	1	0	4
3	AJ6226	Electrical & Electronics Instrumentation	4	1	0	4
4		Open Elective-II	3	0	0	3
5	AJ6228 AJ6229 AJ6230	Professional Elective-II 1. Utilization of Electrical Energy 2. Power System Reliability 3. Electrical Estimation and Costing	3	0	0	3
6	AJ6225	Power Electronics Lab	0	0	3	2
7	AJ6227	Electrical Measurements Lab	0	0	3	2
8		Advanced Communication skills Lab	0	0	3	2
Total			18	2	9	24
9	AJMC03	Energy Studies	3	0	0	0

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

ELECTRICAL & ELECTRONICS ENGINEERING
COURSE STRUCTURE

(Applicable from the batch admitted from 2015-16 onwards)

IV YEAR			I SEMESTER			
S.No.	Code	Subject	L	T	P	Credits
1	AJ7231	Power system Operation & control	4	1	0	4
2	AJ7417	Microprocessor & Microcontrollers	4	0	0	4
3		Open Elective-III	3	0	0	3
4	AJ7232 AJ7243 AJ7244	Professional Elective-III 1. Computer Methods in Power Systems 2. Design of Electrical Machines 3. Modern Power Electronic Converters	3	1	0	3
5	AJ7234 AJ7235 AJ7236	Professional Elective-IV 1. Electrical Distribution Systems 2. High Voltage Engineering 3. Digital Control Systems	3	1	0	3
6	AJ7421	Microprocessor & Microcontroller Lab	0	0	3	2
7	AJ7233	Simulation of Electrical Systems Lab	0	0	3	2
8	AJ8281	Industrial Oriented Mini Project	0	0	0	3
Total			17	3	6	24

IV YEAR			II SEMESTER			
S.No.	Code	Subject	L	T	P	Credits
1	AJ8237 AJ8238 AJ8239	Professional -V 1. Fundamentals of HVDC and FACTS Devices 2. Extra high Voltage AC Transmission 3. Power Quality	3	0	0	3
2	AJ8240 AJ8241 AJ8242	Professional -VI 1. Neural Networks and Fuzzy logic 2. Linear Systems Analysis 3. Advanced Control Systems	3	0	0	3
3	AJ8282	Technical Seminar	0	6	0	3
4	AJ8283	Comprehensive Viva-Voce	0	0	0	3
5	AJ8284	Major Project	0	0	15	12
Total			6	6	15	24

**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)**

LIST OF OPEN ELECTIVES

Department of ECE			
Sr.No.	Subject code	Name of the Open Elective Subject	Preferable Semester
1.	AJ5416	Electronic Measuring Instruments	V
2.	AJ5443	Computer Organization	V
3.	AJ5444	Linear Digital IC Applications	V
4.	AJ5445	Micro Electronic Circuits	V
5.	AJ6446	Instrumentation	VI
6.	AJ6447	Electromagnetic Theory	VI
7.	AJ6448	Image and Video Processing	VI
8.	AJ7449	Bio-medical Instrumentation	VII
9.	AJ7450	Digital Signal Processing	VII
10.	AJ7451	Wireless Sensor Networks	VII
Department of EEE			
11.	AJ5212	Electrical Technology	V
12.	AJ5214	Control Systems	V
13.	AJ5220	Renewable Energy Sources	V/VI
14.	AJ5221	Energy Storage Systems	V/VI
15.	AJ5222	Electrical Engineering Materials	V/VI
16.	AJ8240	Neural Networks & Fuzzy Logic	VI/VII
Department of CSE			
17.	AJ3511	Data Management Systems	III/IV
18.	AJ5521	Computer Networks	IV/V/VI
19.	AJ6529	Network Security	VI/VII
20.	AJ6530	Cloud Computing and IoT	VI/VII/VIII
21.	AJ6531	Natural Language Processing	VII/VIII
22.	AJ6532	Artificial Intelligence and Robotics	VII/VIII
23.	AJ8553	Big-Data Management	VII/VIII
Department of ME			
22.	AJ5360	Material Science	V
23.	AJ6309	Mechanics of Solids	V
24.	AJ6361	Thermal Sciences	VI
25.	AJ5362	Engineering Mechanics	V
26.	AJ7342	Finite Element Method	VII/VIII
27.	AJ7363	Optimization Techniques and Its Applications	VII/VIII
Department of CE			
27.	AJ5129	Disaster Management	V/VI
28.	AJ5130	Environmental Impact Assessment	V/VI
29.	AJ5131	Basics of Civil Engineering	V/VI
30.	AJ6132	Quantity Surveying and Costing	VI

31.	AJ7133	Construction Project Management	VI
		Department of MBA	
33.	AJ_E01	Management Science	III/IV/V
34.	AJ_E02	Managerial Economics and Financial Analysis	III/IV/V/VI
35.	AJ_E03	Total Quality Management	V/VI
36.	AJ_E04	Global Marketing	VI/VII
37.	AJ_E05	Green Marketing	VI/VII
38.	AJ_E06	Intellectual Property Rights	V/VI
39.	AJ_E07	Supply Chain Management	V/VI
40.	AJ_E08	Statistical Quality Control	VI/VII
41.	AJ_E09	Financial Analysis and Reporting	V/VI
42.	AJ_E10	Micro and Small Enterprises Management	V/VI
Note: ‘_’ represents the subject code with semester of the respective B.Tech branch			

B.TECH

I YEAR

I & II SEMESTER

SYLLABUS

**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)**

(AJ1001) MATHEMATICS-I

I Yr. I Sem: Common to all branches

**L T P C
4 0 0 4**

COURSE OBJECTIVE:

The main aim of teaching Engineering Mathematics-I is to emphasize the relevance of fundamentals and applications of Mathematics in Engineering field. Mathematics is the basic of all branches of modern business and science and technology. It deals with using the constructive results of mathematics to solve a problem in applied science or Engineering field.

It helps the students in choosing a technique that improve the quality and efficiency of actual computation.

UNIT-I:

DIFFERENTIAL EQUATIONS OF FIRST ORDER AND THEIR APPLICATIONS:

Exact equations, equations reducible to exact equations, linear equations, Bernoulli's equations, Applications: Orthogonal Trajectories, Newton's Law of Cooling, Natural Law of Growth and Decay.

UNIT-II:

LINEAR DIFFERENTIAL EQUATIONS OF HIGHER ORDER:

Definition, complete solution, operator D, Rules for finding the complementary function, Inverse operator, Rules for finding the particular integral, working procedure, Method of variation of parameters.

UNIT – III:

DIFFERENTIAL CALCULUS:

Fundamental theorems: Rolle's Theorem, Lagrange's Mean Value Theorem (proof with geometrical interpretation), Cauchy's Mean Value Theorem and Taylor's Theorem (without proof). Expansions of functions: Maclaurin's series, Taylor's series.

Functions of two or more variables: Jacobians, Maxima and Minima of functions of two variables.

UNIT – IV:

MULTIPLE INTEGRALS:

Double integrals, change of order of integration, double integrals in polar coordinates. Triple integrals, Change of variables .

UNIT – V:

LAPLACE TRANSFORMS:

Introduction, definition: Conditions for existence, transforms of elementary functions, properties of Laplace transforms, transforms of periodic functions. Transforms of derivatives, transforms of integrals, multiplication by t^n , division by t . Evaluation of integrals by Laplace transforms. Inverse transforms other methods of finding inverse transforms, convolution theorem and application to differential equations. Unit step function, unit impulse function.

LEARNING OUTCOMES:

1. By learning the first order differential equations student can able to find the solutions of many applications in engineering field.
2. By studying the higher order differential equation many of the transcendental equations are solvable very easily.
3. By studying the mean value theorems student can find roots of the algebraic and transcendental equations.
4. By studying the applications of integration the student able to study find area, surface and volume of a revolution.
5. The students understand how to find the solution of initial and boundary value problem without finding general solution by Laplace technique.

RECOMMENDED TEXT BOOKS:

1. B. S. Grewal: Higher Engineering Mathematics, Khanna Publications, 43rd edition, 2014.
2. R. K. Jain and S. R. K. Iyengar: Advanced Engineering Mathematics, Narosa Publishing House, 2014.

REFERENCE BOOK:

1. Erwyn Kreyszig : Advanced Engineering Mathematics, John Wiley and Sons, 8th Edition.
2. T. K. V. Iyengar: Engineering Mathematics-I, S. Chand and Company.
3. A textbook of Engineering Mathematics Vol-I by P.B.Bhaskara Rao, S.K.V.S. Ramachary.
4. A textbook of Engineering Mathematics Vol-I by C. Shankaraiah, VGS Book Link.

**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)**

(AJ1013) ENGLISH

B.Tech., I Year I Sem: Common to all branches

**L T P C
3 0 0 3**

INTRODUCTION:

In view of the growing importance of English as a tool for global communication and the consequent emphasis on training students to acquire communicative competence, the syllabus has been designed to develop linguistic and communicative competencies of Engineering students. The prescribed books and the exercises are meant to serve broadly as students' handbooks.

In the English classes, the focus should be on the skills of reading, writing, listening and speaking and for this the teachers should use the text prescribed for detailed study. For example, the students should be encouraged to read the texts/selected paragraphs silently. The teachers can ask comprehension questions to stimulate discussion and based on the discussions students can be made to write short paragraphs/essays etc.

The text for non-detailed study is for extensive reading/reading for pleasure. Hence, it is suggested that they read it on their own the topics selected for discussion in the class. The time should be utilized for working out the exercises given after each section, as also for supplementing the exercises with authentic materials of a similar kind for example, from newspaper articles, advertisements, promotional material etc.. However, the stress in this syllabus is on skill development, fostering ideas and practice of language skills.

COURSE OBJECTIVES:

- To improve the language proficiency of the students in English with emphasis on LSRW skills.
- To equip the students to study academic subjects more effectively using the theoretical and practical components of the English syllabus.
- To develop the study skills and communication skills in formal and informal situations.

SYLLABUS:

Listening Skills:

Objectives

- To enable students to develop their listening skill so that they may appreciate its role in the LSRW skills approach to language and improve their pronunciation
- To equip students with necessary training in listening so that they can comprehend the speech of people of different backgrounds and regions

Students should be given practice in listening to the sounds of the language to be able to recognise them, to distinguish between them to mark stress and recognise and use the right intonation in sentences.

- Listening for general content
- Listening to fill up information
- Intensive listening
- Listening for specific information

Speaking Skills:

Objectives

1. To make students aware of the role of speaking in English and its contribution to their success.
2. To enable students to express themselves fluently and appropriately in social and professional contexts.
 - Oral practice
 - Describing objects/situations/people
 - Role play – Individual/Group activities (Using exercises from all the **six** units of the prescribed text: *Skills Annexe: Functional English for Success.*)
 - Just A Minute(JAM) Sessions.

Reading Skills:

Objectives

To develop an awareness in the students about the significance of silent reading and comprehension.

- To develop the ability of students to guess the meanings of words from context and grasp the overall message of the text, draw inferences etc.
- Skimming the text
- Understanding the gist of an argument
- Identifying the topic sentence
- Inferring lexical and contextual meaning
- Understanding discourse features
- Scanning
- Recognizing coherence/sequencing of sentences

NOTE : *The students will be trained in reading skills using the prescribed text for detailed study.*

They will be examined in reading and answering questions using 'unseen' passages which may be taken from authentic texts, such as magazines/newspaper articles.

Writing Skills:

Objectives:

- To develop an awareness in the students about writing as an exact and formal skill
- To equip them with the components of different forms of writing, beginning with the lower order ones. Writing sentences
- Use of appropriate vocabulary
- Paragraph writing
- Coherence and cohesiveness
- Narration / description
- Note Making
- Formal and informal letter writing
- Describing graphs using expressions of comparison

TEXTBOOKS PRESCRIBED:

For Detailed Study

- First Textbook entitled “*Skills Annexe -Functional English for Success*”, Published by

Orient Black Swan, Hyderabad

- The Second Textbook entitled “*Epitome of Wisdom*”, published by Maruthi Publications, Hyderabad.
- The course content and study material is divided into **Five Units**.

Unit – I:

- Chapter entitled ‘*Wit and Humour*’ from ‘Skills Annexe’ -Functional English to Success Published by Orient Black Swan, Hyderabad
- Chapter entitled ‘*Mokshagundam Visvesvaraya*’ from “*Epitome of Wisdom*”, Published by Maruthi Publications, Hyderabad.

and

L- Listening for sounds, Stress and intonation

S-Greeting and taking leave, Introducing Oneself and Others (formal and informal situations)

R-Reading for subject/theme

W- Writing paragraphs

G-Types of Nouns and Pronouns

V- Homonyms, homophones synonyms, antonyms

Unit –II

- Chapter entitled “*Advances in Science and Technology*” from “*Skills Annexe - Functional English for Success*” Published by Orient Black Swan, Hyderabad.
- Chapter entitled ‘*Three Days to See*’ from “*Epitome of Wisdom*”, Published by Maruthi Publications, Hyderabad.

and

L-Listening for themes and facts

S-Apologizing, interrupting, requesting and making polite conversations

R- Reading for theme and gist

W-describing people, places, objects&events

G- Verb forms

V- Word Formation - Noun, verb, adjective and adverb

Unit III

- Chapter entitled *Convocation Speech* from “*Epitome of Wisdom*” Published by Maruthi Publications, Hyderabad.
- **Letter Writing** – Letters application with resume, E-mails, Letters of Enquiry,/apology/complaint and so on.
- **Report Writing** – Styles, Formats of Reports and Technical Report Writing

Unit –IV

- Chapter entitled ‘*Risk Management*’ from “*Skills Annexe -Functional English for Success*” Published by Orient Black Swan, Hyderabad.
- Chapter entitled ‘*Leela’s Friend*’ by R.K. Narayan from “*Epitome of Wisdom*”, Published by Maruthi Publications, Hyderabad.

and

L-Listening for main points and sub-points for note taking

S-Giving instructions and directions; speaking of hypothetical situations

R- Reading for details Sivakasi: *Who to Blame for the Frequent Fire Accidents in India’s Largest Fireworks Industry Hub?* By Amritha Gayatri from *Skills Annexe*

W- Note-making, Information Transfer, Punctuation

G – Present tense

V – Synonyms and Antonyms

Unit –V

- Chapter entitled ‘*Human Values and Professional Ethics*’ from “*Skills Annexe - Functional English for Success*” Published by Orient Black Swan, Hyderabad.
- Chapter entitled ‘*The Last Leaf*’ from “*Epitome of Wisdom*”, Published by Maruthi Publications, Hyderabad.

and

L-Listening for specific details and information

S- Narrating, expressing opinions and telephone interactions

R- Reading for specific details and information –*What I Cherish Most* by V. S. Srinivasa Shastri from *Skills Annexe* and *Choose How to Start Your Day* from *Epitome of Wisdom* are for reading comprehension

W-Writing e-mails

G- Past and future tenses

V- Vocabulary - idioms and Phrasal verbs

* Exercises from the texts not prescribed shall also be used for classroom tasks.

Course Outcomes

- Use of correct English Language in functional context
- Enrichment of comprehension and fluency
- At the end of the course, the students would be able to use the basic language skills of Listening, Speaking, Reading and Writing which make them good at professional communication
- Gaining confidence in using language in varied situations

SUGGESTED READING:

1. *Contemporary English Grammar Structures and Composition* by David Green, MacMillan Publishers, New Delhi. 2010.
2. **Technical Communication** by Daniel Riordan. 2011. **Cengage Publications. New Delhi.**
3. **Technical communication by Meenakshi Raman, OUP, 2004.**
4. Handbook of English Grammar and Usage, **Mark Lester and Larry Beason, Tata Mc Graw –Hill.**
5. *An Interactive Grammar of Modern English*, Shivendra K. Varma and Hemalatha Nagarajan, Frank Bros & Co
6. Spoken English, **R.K. Bansal & JB Harrison, Orient Longman.**
7. Effective Technical Communication, **M Ashraf Rizvi, Tata Mc Graw –Hill.**
8. Examine Your English – **Margaret Maison.**
9. Communication Skills by Pushpa Latha, OUP
10. A Text Book of English for Engineers and Technologists, Orient Longman, 1999.
11. English for Engineering Students by Veena Selvam, Sujatha, 2004.
12. English for Employability-**K. Purushotham, Orient Blackswan** (with CD).

**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)**

(AJ1008) ENGINEERING PHYSICS

B.Tech., I Year I Sem: EEE, CSE & ECE

L	T	P	C
4	0	0	4

OBJECTIVES:

- Physics is the mother of engineering and technology. Without the applications of concepts of physics there can be no technological developments. Hence physics is the foundation on which stands the elaborate structure of technology. The main purpose of teaching physics to engineering under graduates is to acquaint the budding engineers with a thread of development. The aim of Physics is to provide an adequate exposure and develop insight about the basic principles of physics along with the engineering applications. The acquaintance of basic physics principles would help the engineers to understand the tools and techniques used in the industry and provide the necessary foundations for inculcating innovative approaches.

UNIT-I:

CRYSTALLOGRAPHY, CRYSTAL STRUCTURES & BAND THEORY OF SOLIDS:

Crystallography & Crystal Structures: Crystal planes & crystal directions, Miller indices, Inter-planar spacing of orthogonal crystal systems. Atomic radius, Co-ordination number and packing fraction of S.C.C., B.C.C & F.C.C., Crystal structure of diamond.

Band theory of solids: Schrodinger time independent wave equation and significance of wave function. Electrons in a periodic potential, Bloch theorem, Kronig-Penny model (Qualitative treatment), E-k curve, Origin of band formation in solids, Classification of materials into conductors, semi conductors and insulators.

UNIT-II:

SEMI-CONDUCTOR PHYSICS & SEMI-CONDUCTOR DEVICES.

Semi-conductor Physics: Calculation of carrier concentration in intrinsic semiconductors and extrinsic semi conductors (N-type), Direct and Indirect band gap semi conductors, Hall effect & its applications.

Semi-conductor devices: Energy diagram of P-N diode, I-V characteristics of P-N junction diode, LED, photo diode & solar cell.

UNIT-III:

DIELECTRICS & MAGNETIC MATERIALS

Dielectrics: Electric dipoles, Dipole moment, Polarizability, Electric susceptibility, Displacement vector, Electronic, ionic and orientational polarizations and calculations of electronic and ionic polarizabilities, Internal fields in solids, Piezo-electricity, Ferro electricity & Pyro electricity (elements only).

Magnetic materials: Origin of magnetic moment, Bohr magneton, Classification of dia, para and ferro magnetic materials on the basis of magnetic moment, Hysteresis curve, Soft and hard magnetic materials , Properties of anti-ferro and ferri magnetic materials and their applications in engineering.

UNIT-IV: LASERS & FIBRE OPTICS

Lasers: Characteristics of lasers, Spontaneous and stimulated emission of radiation, Einstein's coefficients (qualitative treatment), Population inversion, Lasing action. Semi conductor diode laser (homo-junction), Applications of lasers in engineering and medicine.

Fibre Optics: Acceptance angle and acceptance cone, Numerical aperture, Step index and graded index fibres, Applications of optical fibres in communication systems.

UNIT-V: SUPER-CONDUCTIVITY & NANO SCIENCE

Super-conductivity: Zero resistance, Critical temperature, Perfect dia-magnetism, Meissner effect, Critical field (H_c), Type-I & Type -II super conductors, Applications of super conducting magnets.

Nano Science: Nano scale, Surface to volume ratio, Quantum confinement, Top-down method: Bottom-up fabrication, sol-gel method, chemical vapour deposition method, Characterization by SEM (Principles) - Applications.

LEARNING OUTCOMES:

1. The student learns about crystalline materials and their structures.
2. The student learns about classification of solids by band theory.
3. The student learns how to calculate number of charge carriers in a semi conductor.
4. The student learns about fabrication of semi conductors into devices.
5. The student learns about dielectrics and magnetic materials along with their engineering applications.
6. The student learns about lasers, their construction and applications in engineering field.
7. The student learns about super conductors, classifications and their applications.
8. The student learns about nano materials and their fabrication methods along with their characterisation by XRD & SEM.

TEXT BOOKS:

1. Engineering Physics, P.K Palanisamy, Scitech Publications
2. Engineering Physics, V. Rajandran, Tat Mc. Graw Hill Book Publishers.
3. A Text Book of Engg Physics – M. N. Avadhanulu & P. G. Khsirsagar, S. Chand & Co. (for acoustics).
4. Applied Physics for Engineers – P. Madhusudana Rao, Academic Publishing Company, 2013.

REFERENCE BOOKS:

1. Solid State Physics – M.Armugam, Anuradha Publications.
2. Modern Physics – R. Murugesan & K. Siva Prasath, S. Chand & Co. (for Statistical Mechnaics).
3. Introduction to Solid State Physics, C. Kittel (Wiley Eastern).
4. Solid State Physics, A.J. Dekker (Macmillan).
5. Applied Physics, Mani Naidu Pearson Edition.
6. Engineering Physics, K. Vijay Kumar, T. Sreekanth, S. Chand Publications.
7. Engineering Physics, D.K. Bhattacharya, Poonam Tandon, Oxford University Press

**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)**

(AJ1010) ENGINEERING CHEMISTRY

B.Tech., I Year I Sem: EEE, CIVIL & MECH.

**L T P C
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COURSE OBJECTIVES:

The purpose of these courses is to emphasize the relevance of fundamentals and applications of chemical sciences in the field of engineering. Thus, the courses have been conceived in such a way that they take into account appropriate combinations of old and new emerging concepts in the chemical sciences area and their current and potential uses in engineering. The Courses attempt to address the principles of general chemistry and specific topics relevant to various engineering disciplines, wherein the students can apply this learning in their respective areas of expertise.

The syllabus has sought to fulfill the objective of making the student of engineering and technology realize that chemistry like other subjects is the real base of their profession and that therefore they must have a good understanding of chemistry before they can use it in their profession.

UNIT- I:

ELECTRO CHEMISTRY

Ohm's law, conductance, specific, equivalent and molar conductance, units and their relation. Numerical Problems. EMF: Electrochemical and Electrolytic cells, Galvanic cell, Electrochemical series, measurement of emf and single electrode potential, Nernst's equation and its applications.

UNIT- II:

ELECTRODES AND BATTERY CHEMISTRY

Introduction, Types of electrodes: Reference electrodes (SHE, SCE and QH). Determination of PH. Numerical Problems. Batteries: Primary cells-Dry cell, Secondary cells - Pb-Acid storage cell, Fuel cells- Hydrogen-Oxygen fuel cell.

UNIT-III:

CORROSION AND ITS CONTROL

Introduction, Causes of corrosion, Types of corrosion- Dry and Wet corrosion (Galvanic & concentration). Factors affecting on corrosion, Corrosion controlling methods- Cathodic protection and Surface coatings (anodic and Cathodic), Methods of applications of metal coatings- Hot dipping and electroplating.

UNIT-IV:

POLYMER CHEMISTRY

Introduction, Functionality of Monomers, classification of polymers, Types of polymerization, Mechanism of polymerization: Chain and step. Plastics: Chemistry of Thermoplastic resins (PE, PVC & PS) and thermosetting resins (Nylon & Bakelite).

UNIT – V:

WATER CHEMISTRY

Introduction, Types of hardness, units and Numerical problems, Estimation of hardness of water-EDTA method. Boiler Troubles, caustic embrittlement & Boiler corrosion. Treatment of Boiler feed water- Zeolite and Ion-exchange process.

COURSE OUTCOMES:

- Applications of electrochemistry understanding different types of cells, their representation, knowledge of electrode potentials, utilization of electrical energy and its conversion into different energies.
- Applicability of electrodes in different fields of analysis.
- Understanding the utility of batteries as a source of energy in many electronic gadgets & their types.
- Enhancement of power generation by making of fuel cells. Knowledge of need for alternate source of energy.
- Deterioration of metal under the influence of environment, Mechanism of corrosion, Factors affecting corrosion, Prevention of corrosion using various methods & A basic knowledge of surface coatings.
- Improving the properties of plastics by various additives, Integral role of various polymers in our life style & Applicability of plastic in automobile and textile industry.
- Knowledge of hardness of water and its effects, Industrial utility of water especially for steam generation, Removal Methodologies of hardness.

TEXT BOOKS:

1. Text Book of Engineering Chemistry by C. Parameshwara Murthy. B.S. Publications.
2. Text Book of Engineering Chemistry by Y. Bharathi kumari and Jyotsna Cherikuri, VGS Publications.
3. Text Book of Engineering Chemistry by Shashi Chawla
4. Text Book of Engineering Chemistry by B. Ramadevi & Ch. Venkata Ramana Reddy, CENGAGE Learning 2012.

REFERENCE BOOKS:

1. Elementary principles of Physical Chemistry by P.W. Atkins, Oxford University Press.
2. Physical Chemistry by Puri & Sharma
3. Engineering Chemistry by Jain & Jain
4. Engineering Chemistry by Shashi Chawla.
5. Polymer Chemistry by Gourikar.
6. Physical Chemistry Glastone.

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)
(AJ1303) ENGINEERING GRAPHICS

B.Tech. I Year I SEM: CSE, EEE

L T P C
2 0 4 4

COURSE OBJECTIVES:

1. Use various engineering drawing instruments.
2. Learn the basic conventions of drawings, dimensioning, scales and conic sections like
Ellipse, parabola and hyperbola.
3. Learn projections of points, lines viewed in different positions
4. Learn projections of plane surfaces and solids viewed in different positions.
5. Gain knowledge of sections of solids and their usage in real time applications.

UNIT – I:

INTRODUCTION TO ENGINEERING DRAWING: Principles of Engineering Drawing and their significance-Drawing Instruments and their use. Principle of Dimensioning.

Geometrical Constructions of regular polygons.

Conic Sections: Ellipse, parabola & Hyperbola (General Method only)

Cycloidal Curves: Cycloid, Epi – cycloid & hypo – cycloid.

Involutes: Circle, square, pentagon & hexagon.

UNIT-II:

ORTHOGRAPHIC PROJECTIONS IN FIRST ANGLE PROJECTION:

Principles of Orthographic Projections – Conventions – First and Third Angle Projections-
Projections of Points- Projections of lines inclined to one plane and parallel to other.

PROJECTIONS OF PLANES: Ortho Graphic Projections of Regular Planes-Surface inclined to both the principal planes.

UNIT-III:

PROJECTIONS OF RIGHT REGULAR SOLIDS: Prism, Cylinder, Pyramid, Cone -Axis inclined to both the principal planes.

UNIT-IV:

SECTIONS AND SECTIONAL VIEWS: Right Regular Solids – Prism, Cylinder, Pyramid, Cone & Auxiliary views.

UNIT-V:

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

TEXT BOOKS:

1. Engineering Drawing. N.D.Bhatt.

REFERENCE BOOKS:

1. Engineering Drawing – Besant, Agrawal, TMH
2. Engineering Drawing by K.Venu Gopal & V.Prabu Raja New Age publications.
3. Engineering Graphics. P I Varghese Tata McGraw Hill Education Pvt. Ltd.

COURSE OUTCOMES:

The students will be able to

1. Understand and draw the different types of conic sections
2. Analyze the projections of points, straight lines, plane surfaces, solids at different positions and angles.
3. Convert orthographic views into isometric views and vice versa.

**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)**

(AJ1014)ENGLISH LANGUAGE COMMUNICATION SKILLS LAB

B.Tech., I Year I Sem: EEE, ECE, CIVIL & MECH

L	T	P	C
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The **Language Lab** focuses on the production and practice of sounds of language and familiarises the students with the use of English in everyday situations and contexts.

COURSE OBJECTIVES:

- To facilitate computer-aided multi-media instruction enabling individualized and independent language learning
- To sensitize the students to the nuances of English speech sounds, word accent, intonation and rhythm
- To bring about a consistent accent and intelligibility in their pronunciation of English by providing an opportunity for practice in speaking
- To improve the fluency in spoken English and neutralize mother tongue influence
- To train students to use language appropriately for interviews, group discussion and public speaking

SYLLABUS:

English Language Communication Skills Lab shall have two parts:

a. Computer Assisted Language Learning (CALL) Lab

b. Interactive Communication Skills (ICS) Lab

The following course content is prescribed for the **English Language Communication Skills Lab**

EXERCISE-I

CALL Lab: Introduction to Phonetics – Speech Sounds – Vowels and Consonants

ICS Lab: Ice-Breaking Activity and JAM Sessions

Intensive Practice in Articles, Prepositions, Word Formation- Prefixes & Suffixes, Synonyms & Antonyms with Software/Handouts

EXERCISE-II

CALL Lab: Structure of Syllables - Past Tense Marker and Plural Marker – Weak Forms and Strong Forms - Consonant Clusters.

ICS Lab: Situational Dialogues – Role-Play- Expressions in Various Situations – Self-introduction and Introducing Others – Greetings – Apologies – Requests – Social and Professional Etiquette - Telephone Etiquette.

Concord (Subject in agreement with verb) and Words Often Misspelt- Confused/Misused

EXERCISE-III

CALL Lab: Minimal Pairs- Word Accent and Stress Shifts- Listening Comprehension.

ICS Lab: Descriptions- Narrations- Giving Directions and Guidelines.

Sequence of Tenses, Question Tags and One Word Substitutes.

EXERCISE-IV

CALL Lab: Intonation and Common Errors in Pronunciation.

ICS Lab: Extempore- Public Speaking

Active and Passive Voice, –Common Errors in English, Idioms and Phrases

EXERCISE-V

CALL Lab: Neutralization of Mother Tongue Influence and Conversation Practice

ICS Lab: Information Transfer- Oral Presentation Skills

Reading Comprehension and Job Application with Resume Preparation.

COURSE OUTCOMES:

- Better Understanding of nuances of language through audio- visual experience and group activities
- Neutralization of accent for intelligibility
- Speaking with clarity and confidence thereby enhancing employability skills of the students

Minimum Requirement of Infrastructural Facilities for ELCS Lab:

1. Computer Assisted Language Learning (CALL) Lab:

The Computer Aided Language Lab for 40 students with 40 systems, one master console, LAN facility and English language software for self- study by learners.

System Requirement (Hardware Component):

Computer network with LAN with minimum 60 multimedia systems with the following specifications:

- i) P – IV Processor
 - a) Speed – 2.8 GHZ
 - b) RAM – 512 MB Minimum
 - c) Hard Disk – 80 GB
- ii) Headphones of High Quality

2. Interactive Communication Skills (ICS) Lab :

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

Prescribed Lab Manual: A Manual entitled “*English Language Communication Skills (ELCS) Lab Manual- cum- Work Book*”, published by Cengage Learning India Pvt. Ltd, New Delhi. 2013.

- *In addition to the prescribed lab manual, all the listening and speaking activities mentioned in Text-1 and Text-2 can be conducted in the English Language Communication Skills Lab.*

Suggested Software:

- **Macmilan Dictionary Modern English** (with CD).
- **Oxford Advanced Learners’ Dictionary** (with CD).
- **Cambridge Advanced Learners’ English Dictionary with CD.**
- **Grammar Made Easy by Darling Kindersley**
- **Punctuation Made Easy by Darling Kindersley**
- **Clarity Pronunciation Power – Part I**
- **Clarity Pronunciation Power – part II**
- **Oxford Advanced Learner’s Compass, 8th Edition**
- **DELTA’s key to the Next Generation TOEFL Test: Advanced Skill Practice.**

- Lingua TOEFL CBT Insider, by Dreamtech
- TOEFL & GRE (KAPLAN, AARCO & BARRONS, USA, Cracking GRE by CLIFFS)
- **English in Mind (Series 1-4), Herbert Puchta and Jeff Stranks with Meredith Levy, Cambridge**
- **English Pronunciation in Use** (Elementary, Intermediate, Advanced) Cambridge University Press
- Raman, M & Sharma, S. 2011. Technical Communication, OUP
- Sanjay Kumar & Pushp Lata. 2011. Communication Skills, OUP

SUGGESTED READING:

1. Rama Krishna Rao, A. *et al. English Language Communication Skills – A Reader cum Lab Manual Course Content and Practice.* Chennai: Anuradha Publishers
2. Suresh Kumar, E. & Sreehari, P. 2009. *A Handbook for English Language Laboratories.* New Delhi: Foundation
3. *Speaking English Effectively* 2nd Edition by Krishna Mohan and N. P. Singh, 2011. Macmillan Publishers India Ltd. Delhi.
4. Hancock, M. 2009. *English Pronunciation in Use. Intermediate.* Cambridge: CUP
5. *Spoken English: A Manual of Speech and Phonetics* by R. K. Bansal & J. B. Harrison. 2013. Orient Blackswan. Hyderabad.
6. *Spoken English* (CIEFL) in 3 volumes with 6 cassettes, OUP.
7. *A Textbook of English Phonetics for Indian Students* by T. Balasubramanian (Macmillan)
8. *English Skills for Technical Students* by Amaresh Mukherjee, 2002.
9. *Learning English – A communicative approach*, Orient Longman, 2005.
10. *A Practical Course in English Pronunciation* by J. Sethi, 2004..

**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)**

(AJ1011) PHYSICAL SCIENCES LAB

B.Tech., I Year I Sem: EEE

L	T	P	C
0	0	3	2

OBJECTIVES:

This course on Physical Sciences lab has been designed with 12 experiments in Physics and Chemistry. The objective of the course is that the student will have exposure to various experimental skills which is very essential for an engineering student. The experiments are selected from various areas of physics and chemistry like Physical Optics, Lasers, Fiber optics, Electricity, Conductometry, Potentiometry, etc... The student is also exposed to various tools like Screw Gauge, Vernier callipers, Physical balance, Spectrometer, Microscope, Viscometer, and stalagmometer, etc...

CYCLE-1

1. Determination of energy gap of semiconductor material of p-n junction diode.
2. Determination of frequency of electrical vibrator by using Melde's experiment.
3. Determination of wavelength of LASER by using diffraction grating.
4. Determination of rigidity modulus of a given wire using Torsional pendulum.
5. R-C circuit analysis.
6. Determination of Numerical aperture of a given optical fiber.

CYCLE-2

1. Estimation of ferrous iron by Dichrometry.
2. Estimation of hardness of water by EDTA method.
3. Conductometric titration of strong acid vs. strong base.
4. Titration of strong acid vs. strong base by potentiometry.
5. Determination of viscosity of sample oil by Ostwald's viscometer.
6. Determination of Surface tension of lubricants.

Laboratory Manuals:

1. Laboratory Manual Of Engineering Physics By Dr. Y.Aparna And Dr K. Venkateswara Rao (V.G.S Publishers)
2. Practical Engineering Chemistry by K. Mukkanti, etal' B'S' Publications, Hyderabad.

**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)**

(AJ1307) ENGINEERING WORKSHOP & IT WORKSHOP

B.Tech. I Year I SEM:EEE

**L T P C
0 0 3 2**

COURSE OBJECTIVES:

1. Know the usage of various tools and their application in carpentry, tin smithy.
2. Know the usage of various tools and their application in black smithy, foundry, welding and house wiring.
3. Make lap joint and dove tail joint in carpentry.
4. Make scoop, funnel and tray like items in tin smithy.
5. Use one – way, two-way switches, parallel and series connections in house wiring.
6. Know the basics of welding.

UNIT – I:

TRADES FOR EXERCISES: (Ten exercises are required to perform from the following trades)

1. Carpentry 2
2. Fitting 2
3. Tin – Smithy 2
4. Black Smithy 1
5. House – wiring 2
6. Plumbing 1

UNIT – II:

TRADES FOR DEMONSTRATION & EXPOSURE

1. Demonstration of Power tools
2. Welding.

UNIT – III:

IT WORKSHOP I: Computer hardware, identification of parts, Disassembly, Assembly of computer to working condition, simple diagnostic exercises.

IT WORKSHOP II: Installation of operating system windows and Linux simple diagnostic exercises.

TEXTBOOKS:

1. Workshop Manual – P.Kannaiah / K.L.Narayana/SciTech Publishers.
2. Workshop Manual – Venkat Reddy/BS Publication / 6th Edition.

COURSE OUTCOMES:

The students will be able to

1. Know the fundamental knowledge of various trades and their usage in real time applications.
2. Gain knowledge of Welding, Black smithy, Fitting, and house wiring.
3. Understand the basis for analyzing power tools in construction and wood working, electrical engineering and mechanical engineering.
4. Use basic concepts of computer hardware for assembly and disassembly.

**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)**

(AJ2002) MATHEMATICS – II

I Yr. II Sem: Common to all branches

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3	1	0	4

COURSE OBJECTIVE:

The main aim of this subject is to improve the mathematical knowledge of the student. When the student study the mathematics-II he should get the impression that mathematics is a systematic science of practical importance, resting on a relatively small number of basic concepts and involving powerful unifying methods. He should soon convince himself of the necessity for applying mathematical procedures to engineering problem.

By studying the mathematics the students translating the given physical information into mathematical model. This model may be a differential equation, a system of equation or some other mathematical expression.

UNIT-I :

MATRICES-I

Rank of matrix, elementary transformations, elementary matrices, inverse from elementary matrices, Normal form of a matrix, consistency of linear system of equations.

UNIT-II:

MATRICES-II

Eigen values and Eigen vectors, properties of Eigen values, Cayley-Hamilton theorem, reduction to diagonal form, similarity transformation. Complex matrices.

UNIT – III:

FOURIER SERIES:

Introduction, Euler's formulae, conditions for a Fourier expansion, functions having points of discontinuity, change of interval, odd and even functions-expansions of odd or even periodic functions, half-range series..

UNIT - IV:

VECTOR CALCULUS:

Definition of vectors, Scalar and Vector point functions-vector operator del., Del applied to scalar point functions-Gradient. Del applied to a vector point functions- Divergence and Curl –Irrotational and solenoidal fields. Integration of vectors: Line integration- Circulation-Work. Surface Integral- Green's theorem in the plane, Stokes's theorem. Volume integral, Divergence theorem.

UNIT – V:

PARTIAL DIFFERENTIAL EQUATION:

Introduction, Formation of partial differential Equations, solutions of a partial order differential equations. linear equations of first order, non-linear Equations of first order. Method of separation of variables-Vibrations of a stretched string-Wave equation.

LEARNING OUTCOMES:

1. The student learns about the rank of the matrix and solving of system of simultaneous linear equations.

2. The student learns about how to find the eigen values and eigen vectors of different engineering fields and they use concept of matrices in the development of programming languages.
3. By studying the Fourier series & Fourier transforms students are able to solve the problem related to theory of circuits and many applications in electronics engineering and communication engineering.
4. The concept of vector integrations (Green's, Gauss & Stoke's theorems), students are able to convert double integration into line integrations and triple integrations.
5. By studying the partial differential equation students are able to solve the many applications of mechanical and civil Engineering.

RECOMMENDED TEXT BOOKS:

1. B. S. Grewal : Higher Engineering Mathematics, Khanna Publications, 43rd edition, 2014.
2. R.K.Jain and S.R.K.Iyengar : Advanced Engineering Mathematics, Narosa Publishing House, 2014.

REFERENCE BOOK:

1. T.K.V.Iyengar:Mathematical Methods, S.Chand and Company.
2. Erwyn Kreyszig : Advanced Engineering Mathematics, John Wiley and Sons, 8th Edition.
3. A textbook of Engineering Mathematics Vol-I by P.B.Bhaskara Rao, S.K.V.S. Ramachary
4. A textbook of Engineering Mathematics Vol-I by C. Shankaraiah, VGS Book Link
5. Schaum's Outline of Advanced Calculus, Third Edition (Schaum's Outline Series)

**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)**

(AJ2012) ENVIRONMENTAL STUDIES

B.Tech., I Year II Sem: EEE

L	T	P	C
3	0	0	2

COURSE OBJECTIVES:

1. Understanding the importance of ecological balance for sustainable development.
2. Understanding the impacts of developmental activities and mitigation measures.
3. Understanding the environmental policies and regulations.

UNIT-I:

ECOSYSTEMS

Definition, Scope and Importance of ecosystem. Classification, structure and function of an ecosystem, Food chains, food webs and ecological pyramids. Flow of energy, Biogeochemical cycles, Bioaccumulation, Biomagnification, ecosystem value, services and carrying capacity.

UNIT-II:

NATURAL RESOURCES:

Classification of Resources, Living and Non-Living resources, water **resources:** use and over utilization of surface and ground water, floods and droughts, Dams: benefits and problems. **Energy resources:** growing energy needs, renewable and non renewable energy sources, use of alternate energy source, case studies.

UNIT-III:

BIODIVERSITY AND BIOTIC RESOURCES:

Introduction, Definition, genetic, species and ecosystem diversity. Value of biodiversity; consumptive use, productive use, social, ethical, aesthetic and optional values. India as a mega diversity nation, Hot spots of biodiversity. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts; conservation of biodiversity: In-Situ and Ex-situ conservation. National Biodiversity act.

UNIT-IV:

ENVIRONMENTAL POLLUTION AND CONTROL TECHNOLOGIES:

Environmental Pollution: Classification of pollution, **Air Pollution:** Primary and secondary pollutants, Automobile and Industrial pollution, Ambient air quality standards. **Water pollution:** Sources and types of pollution, drinking water quality standards. **Soil Pollution:** Sources and types, Impacts of modern agriculture, degradation of soil. **Noise Pollution:** Sources and Health hazards, standards, **Solid waster:** Municipal Solid Waste management, composition and characteristics of e-Waste and its management. **Pollution control technologies:** Wastewater Treatment methods: Primary, secondary and Tertiary.

UNIT-V

GLOBAL ENVIRONMENTAL PROBLEMS AND GLOBAL EFFORTS:

Climate change and impacts on human environment. Ozone depletion and Ozone depleting substances (ODS). Deforestation and desertification. International conventions / Protocols: Earth summit, Kyoto protocol and Montreal Protocol.

COURSE OUTCOMES:

After undergoing the course the student would be able to know about

1. Understanding of Ecosystem,
2. Natural resources
Depletion of natural resources & prevention of natural resources.
3. Biodiversity
Protection, sharing of the biodiversity.
4. Environmental pollution
Understanding of water, soil, noise, air pollutions and their control measurements.

SUGGESTED TEXT BOOKS:

1. Textbook of Environmental Studies for Undergraduate Courses by Erach Bharucha for University Grants Commission.
2. Environmental Studies by R. Rajagoplalan, Oxford University Press.

REFERENCE BOOKS:

1. Environmental Science: towards a sustainable future by Richard T.Wright. 2008 PHL Learning Private Ltd. New Delhi.
2. Environmental Engineering and science by Gilbert M. Masters and Wendell P. Ela 2008 PHI Learning Pvt. Ltd.
3. Environmental Science by Daniel B. Botkin & Edward A. Keller, Wiley INDIA edition.
4. Environmental Studies by Anubha Kaushik, 4th Edition, New age international publishers.
5. Text book of Environmental Science and Technology – Dr. M. Anji Reddy 2007, BS Publications.
6. The syllabus of Environmental Studies prescribed by UGC/JNTUH is approved for adoption.

**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)**

(AJ2004) NUMERICAL METHODS

B.Tech-I Yr. II Sem: EEE & ECE

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COURSE OBJECTIVE:

The main aim of the numerical methods to examine the constructive abstract methods of mathematics when illustrated with suitable numerical techniques. Numerical methods which were developed for purely theoretical reasons suddenly becomes of great importance in engineering mathematics. It follows that the most important objective and purpose in engineering mathematics seems to be that the student become familiar with mathematical thinking's.

UNIT – I:

SOLUTIONS OF ALGEBRAIC AND TRANSCENDENTAL EQUATIONS:

Introduction, solution of algebraic and transcendental equations- Bisection Method, Regular-Falsi method, Newton-Raphson's method.

UNIT – II:

FINITE DIFFERENCES AND INTERPOLATION:

Finite differences, Relation between the operators, To find one or more missing terms, Newton's interpolation formulae, central difference interpolation formula-Gauss interpolation formulae. Interpolation with un-equal intervals-Lagrange's Interpolation formula.

UNIT – III:

CURVE FITTING:

Introduction, Method of Least squares-Derivation of normal equations- Fitting a polynomial function (straight line and parabola), fitting an Exponential function, fitting a power function.

UNIT – IV:

NUMERICAL DIFFERENTIATION AND INTEGRATIONS:

Numerical differentiation, formulae for derivatives. Numerical Integration: Newton-Cotes quadrature formula-Trapezoidal rule, Simpson's $1/3^{\text{rd}}$ rule, Simpson's $3/8^{\text{th}}$ rules.

UNIT – V:

NUMERICAL SOLUTIONS OF ORDINARY DIFFERENTIAL EQUATIONS:

Introduction, Euler's Method, Modified Euler's Method, Runge's method, Runge-kutta method.

COURSE OUTCOMES:

1. The students can learn about the algebraic and transcendental equation and they find the roots of the equation by iterative methods.
2. The students can interpretive the large data of interpolation through formulae of interpolation.
3. Students learn how to fit the curve by using least squares method.
4. By studying Trapezoidal rule and Simpson's rule to improve the differentiation and integration techniques.

5. By studying the Runge-kutta methods student can able to bring out approximate solutions of first order ordinary differential equations and can be extended to higher order.

RECOMMENDED TEXT BOOKS:

1. B.S.Grewal : Higher Engineering Mathematics, Khanna Publications,43rd edition,2014.
2. S.R.K. Iyengar and R.K.Jain: advanced engineering mathematics,fourth edition,2014.

REFERENCE BOOK:

1. Erwyn Kreyszig : Advanced Engineering Mathematics, John Wiley and Sons, 8th Edition.
- 2.T.K.V.Iyengar: Mathematical Methods, S.Chand and Company.
3. R.K.Jain and S.R.K.Iyengar : Advanced Engineering Mathematics,
Narosa Publishing House, 2008
4. Mathematical Methods by P.B. Bhaskar Rao, S.K.V.S.Rama Chary, M.Bhujanya Rao,
B.S.Publications
5. Mathematical Methods by K.V. Suryanarayana Rao, by Scitech Publications

**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)**

(AJ2201) ELECTRICAL CIRCUITS-I

B.Tech I Year II Sem: EEE

**L T P C
3 1 0 4**

COURSE OBJECTIVES:

- The course introduces the basic concept of circuit analysis which is the foundation for all subjects of the Electrical Engineering discipline. The emphasis of this course is laid on the basic analysis of circuits which includes Single phase circuits, magnetic circuits and theorems.

UNIT-I:

INTRODUCTION TO ELECTRICAL CIRCUITS:

Essence of electricity, Electric field electric current, potential difference, E.M.F, electric power Ohm's law, R-L-C parameters, Voltage and Current sources, dependent and independent sources, Source Transformation, Voltage & Current relationship for passive elements for different input signals (square, ramp, saw-tooth, triangular).

KCL, KVL, network reduction techniques, series, parallel, series-parallel, Star-Delta, Delta-Star transformations. Nodal analysis, Mesh analysis, Super node and Super mesh for DC excitations.

UNIT-II:

SINGLE PHASE AC CIRCUITS:

R.M.S, average values and form factor for different periodic wave forms-steady state analysis of R, L, C (in different combination) with sinusoidal excitation –concept of reactance, impedance, susceptance and admittance. Phase and phase difference, concept of power factor, real and reactive power, J-notation, complex and polar forms of representation, complex power.

UNIT-III:

LOCUS DIAGRAM AND RESONANCE:

Locus diagram: Series R-L, R-C, R-L-C and parallel combination with variation of various parameters. Resonance: Series, parallel circuits, concept of bandwidth and Q-factor.

UNIT-IV:

NETWORK THEOREMS (WITH D.C AND A.C EXCITATION)

Super position, Reciprocity, Norton's, Thevenin's, Maximum power transfer, Milliman's Tellegen's and compensation theorems and Problems.

UNIT-V:

MAGNETIC CIRCUITS:

Magnetic circuits, Faraday's laws of electromagnetic induction – concept of self and mutual inductance, Dot convention, coefficient of coupling, composite magnetic circuits, analysis of series and parallel magnetic circuits.

TEXT BOOKS:

1. Engineering Circuit Analysis by William Hayt and Jack E. Kemmerly, McGraw Hill Company, 6th edition.

2. Network Analysis by A.Sudhakar and Shyammohan S Palli, Tata MC Graw Hill
3. Electrical Circuits by A.Chakrabarthy, Dhanpat Rai & Sons.

REFERENCE BOOKS:

1. Network Analysis by M.E. Van Valkenberg.
2. Linear Circuit Analysis (time domain, Phasor and Laplace transform approaches)
Second edition by Raymond A. Decarlo and Penmin – L in, Oxford University Press.
Second edition, 2004.
3. Electrical Circuits Theory by K.Rajeswaram, Pearson Education, 2004.
4. Basic Circuits Analysis by D.R. Cunningham & J.A. Stuller, Jaico Publications.

COURSE OUTCOMES:

- After going through this course the student gets a thorough knowledge on basics of circuit concepts, electrical parameters, single phase AC circuits, magnetic circuits, resonance, and network theorems with which he/she can able to apply the above conceptual things to real-world problems and applications.

**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)**

(AJ2401) BASIC ELECTRONICS ENGINEERING

B.Tech.-I Year II Sem: ECE&EEE

L T P C

4 1 0 4

OBJECTIVES:

This is a fundamental course, which provides basic knowledge and essential to be learned by every circuit branch student. This course will focus:

- to familiarize the student with electronic measuring meters and instruments.
- to understand the principles and working of PN Diode as a Rectifier and Circuit element a Regulator..
- to understand basic principles and working of BJT,FET and Special Devices.

UNIT-I:

ELECTRONIC MEASURING INSTRUMENTS-PRINCIPLES AND OPERATION:

Voltmeter, Ammeter, Power supply (RPS, SMPS) and Cathode Ray Oscilloscope.

UNIT - II:

P-N JUNCTION DIODE: Qualitative Theory of P-N Junction, P-N Junction as a Diode, Diode Current Equation, Volt- Ampere Characteristics, Diode Equivalent Circuits, Breakdown Mechanisms. Zener Diode Characteristics.

RECTIFIERS AND FILTERS: Half Wave and Full Wave Rectifiers, Rectifier with L, C,L-Section and Pi-Section filters, Regulators.

UNIT-III:

BIPOLAR JUNCTION TRANSISTOR : The Junction Transistor, Transistor Current Components, Transistor as an Amplifier, Transistor Construction, Transistor Configurations, Limits of Operation, BJT Hybrid Model, Comparison of CB, CE and CC Amplifier Configurations.

UNIT-IV:

TRANSISTOR BIASING AND STABILIZATION: Operating Point, The DC and AC Load lines, Need for Biasing, Fixed Bias, Collector Feedback Bias, Voltage Divider Bias, Bias Stability, Stabilization Factors, Bias Compensation using Diodes and Thermistors, Thermal Runaway, Thermal Stability

UNIT-V:

FIELD EFFECT TRANSISTOR: Construction, principle of operation, symbol and Volt-Ampere characteristics of JFET and MOSFET, The JFET Small Signal Model.

Special Purpose Devices and Their Operations: Varactor Diode,Tunnel Diode,Photo Diode, LED,UJT,DIAC,TRIAC & SCR.

TEXT BOOKS:

1. Electronic Devices and Circuits – S.Salivahanan, N.Suresh Kumar, A.Vallavaraj, TMH.
2. Electronic Devices and Circuits – David A. Bell, Oxford University Press.

REFERENCE BOOKS:

1. Electronic Devices and Circuits – J. Millman, C.C. Halkias, Satyabratha Jit, TMH.

2. Electronic Devices and Circuits – R.L. Boylestad and Louis Nashelsky, , PEI/PHI.
3. Electronic Devices and Circuits - K. Lal Kishore, BSP.

COURSE OUTCOMES:

At the end of the course, the student will be able to:

- Understand and Analyse the different types of diodes, operation and its characteristics
- Design and analyse the DC bias circuitry of BJT and FET
- Design biasing circuits using diodes and transistors.
- To analyze and design diode application circuits, amplifier circuits and oscillators employing BJT, FET devices.

**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)**

(AJ2501)PROBLEM SOLVING AND COMPUTER PROGRAMMING

B.Tech.,-I Year II Sem: EEE

L	T	P	C
4	0	0	4

OBJECTIVES:

To provide the necessary knowledge on general engineering problem solving methodologies and to provide necessary foundations for step by step computer program development and to present the basic concepts in C programming language and to prepare the students to write modular and readable C Programs. Also the Course introduces the essential concepts like abstract data types, user defined data types, to analyze the performance of algorithms and how to use such knowledge for later processing with the help of files and aims to train the students to write working programs to solve problems.

UNIT-1:

MEANING OF PROBLEM SOLVING – Polya’s 4 Steps: Understanding the problem, Devising a plan, Carrying out the Plan, Looking back–Examples.
Introduction to programming, Algorithms and Flowcharts. Basics of C Language. Input and Output. Elementary problems and program writing.

UNIT-2:

CONTROL STATEMENTS IN C: Conditional Execution and Selection, Iterative and Repetitive Execution, Termination. Nested Loops.
Arrays and Strings: Working with One-Dimensional Arrays, String Manipulation. Working with Multidimensional Arrays, Manipulating String Arrays.
Functions: Prototypes and Definition, Working with Functions, Passing Parameters To Functions. Introduction to Recursion. Scope and Storage Classes.

UNIT-3:

POINTERS IN C: Preliminary Concepts–One-Dimensional Arrays and Pointers, Pointers and Strings, Pointer Arithmetic, Pointers to Pointers, Arrays of Pointers, Pointers to an Array, Multidimensional Arrays and Pointers, Pointers to Functions, Arrays of Function Pointers, Dynamic Memory Handling and Problems.

UNIT-4:

User Defined Data Types and Variables. Structures, Unions, Enumeration Types, Bitwise Operators, Command-Line Arguments, C Preprocessor, Memory Models and Pointers.

UNIT-5:

Files In C: Using Files in C, Working with Text Files, Working with Binary Files, Direct File Input and Output. Files of Records, Random Access into Files of Records–File Management Functions.

TEXT BOOK:

1. Programming in C, Pradip Dey& Manas Ghosh, 2ndEd, Oxford University Press,2013 (Chapters 1, 2, 3, 4, 5 excluding 5.2.6, 6.1 to 6.8, 6.10.1, 7, 8, 9, 11)
2. Programming in C–A complete introduction to the C programming language, Stephen G. Kochan 3rdEd., Sams Publishing,2005
3. The C programming language,Brian W.Kernighan,Dennis M.Ritchie,Second edition,Prentice Hall Software Series

REFERENCE BOOKS:

1. How to Solve it-A New Aspect of Mathematical Method-G.Polya, 1945, Princeton University Press, (Pages 1-29)
2. How to Solve it by Computer–R.G. Dromey, Prentice Hall of India, 1999, (Pages 1- 39)
3. Computer Programming, E. Balaguruswamy, McGraw Hill India (Pvt Ltd), 2014 (Pages 1.1 to 6.19)
4. Problem Solving and Program Design in C, Jeri R. Hanly, Elliot B. Koffman,7thEdition, Pearson Education, 2013.
5. C Programming–A Modern Approach,K. N. King, 2ndEdition, W. W. Norton & Company; New York, 2008.

COURSE OUTCOMES:

- 1: A strong foundation in core Computer Science and Engineering, both theoretical and applied concepts.
- 2: An ability to apply knowledge of mathematics, science, and engineering to real-world problems.
- 3: Ability to model, understand, and develop complex software for System Software as well as Application Software.
- 4: A broad education necessary to understand the impact of Computer Science and Engineering solutions in the scientific, societal, and human contexts.

LEARNING OUTCOMES:

1. Understanding how problems are posed and how they can be analyzed for obtaining solutions.
2. Understanding the fundamentals of C programming.
3. Learning of sequencing, branching, looping and decision making statements to solve scientific and engineering problems.
4. Implementing different operations on arrays and creating and using of functions to solve problems.
5. Ability to design and implement different types of file structures using standard methodology.

**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)**

(AJ2402) BASIC ELECTRONICS LAB

B.Tech.-I Year II Sem: ECE & EEE

**L T/P/D C
- /-3/- 2**

PART A: (Only for Viva-voce Examination)

Electronic Workshop Practice (In 3 Lab Sessions):

1. Identification, Specifications, Testing of R, L, C Components (Color Codes) Bread Boards, PCB's
2. Identification, Specifications and Testing of Active Devices, Diodes, BJT's, Low power JFET's, Power Transistors, LED's, LCD's, SCR, UJT.
3. Study and operation of
 - i) Multimeters (Analog and Digital)
 - ii) Function Generator
 - iii) Regulated Power Supplies
 - iv) CRO.

PART B:

1. Forward & Reverse Bias Characteristics of PN Junction Diode
2. Zener diode characteristics & Zener voltage Regulator.
3. Half Wave Rectifier with & without filters.
4. Full Wave Rectifier with & without filters.
5. Input & Output Characteristics of Transistor in CB Configuration.
6. Input & Output Characteristics of Transistor in CE Configuration.
7. Calculation of h-Parameters from CE characteristics.
8. FET characteristics.
9. UJT Characteristics.
10. Design of self bias circuit.

PART C: Equipment required for Laboratories:

1. Regulated Power supplies (RPS) -0-30 V
2. CRO- (20MHz)
3. Function Generators -0-1 MHz.
4. Multimeters
5. Ammeters(0-200 μ A, 0-20mA)
6. Voltmeters (0-20V)
7. Electronic Components -Resistors, Capacitors, BJTs.

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(AJ2502) PROBLEM SOLVING AND COMPUTER PROGRAMMING LAB

B.Tech., I Year II Sem: EEE

L T P C
0 0 3 2

OBJECTIVES:

To provide the necessary knowledge and practical training on general engineering problem solving methodologies and to provide necessary foundations for step by step computer program development and to present the basic concepts in C programming language and to prepare the students to write modular and readable C Programs. Also the Lab Course implements the essential concepts like abstract data types, user defined data types, to analyze the performance of algorithms and how to use such knowledge for later processing with the help of files and aims to train the students to write working programs to solve problems.

SYLLABUS CONTENT

- 1.a Analyze the problem of finding areas of shapes like circle, square, rectangle and triangle. Draw a flow chart.
- 1.b Analyze the problem of finding the area of a quadrilateral assuming that we know how to find the area of a triangle. Draw a flow chart.
- 2.a Analyze the problem of finding, in shortest time, the sum of first n natural numbers, sum of squares of first n natural numbers, sum of cubes of first n natural numbers and sum of squares of squares of first n natural numbers. Draw a flow chart.
- 2.b Analyze the problem of finding the second largest number in a set of n numbers. Draw a flow chart.
3. Write a C program to implement Problems 1.a and 1.b (given above).
- 4.a Write a C program to find the sum of individual digits of a positive integer.
- 4.b Fibonacci sequence is defined as follows: the first and second terms in the sequence are 0 and 1. Subsequent terms are found by adding the preceding two terms in the sequence. Write a C program to generate the first n terms of the sequence.
- 4.c Write a C program to generate all the prime numbers between 1 and n, where n is a value supplied by the user.
- 5.a Write a C program to find the roots of a quadratic equation.
- 5.b Write a C program to find the factorial of a given integer.
- 5.c Write a C program to find the GCD (greatest common divisor) of two given integers.
- 6.a Write a C program to solve Towers of Hanoi problem.
- 6.b Write a C program, which takes two integer operands and one operator from the user, performs the operation and then prints the result. (Consider the operators +, -, *, /, % and use Switch Statement)
- 7.a Write a C program to find both the largest and smallest number in a list of integers.
- 7.b Write a C program to reverse the elements of an array (i.e., the first value should become last value etc.)
8. Write a C program that uses functions to perform all of the following:
 - i. Reading of a matrix.
 - ii. Printing a matrix in a formatted form.
 - iii. Adding two compatible matrices to produce a result matrix
 - iv. Multiplying two compatible matrices to produce a result matrix.
9. Write a C program that uses functions to perform the following operations:
 - i. To insert a sub-string in to a given main string from a given position.

- ii. To delete n Characters from a given position in a given string.
- iii. Write a C program to determine if the given string is a palindrome or not.
- 10.a Write a C program using pointer to create a two dimensional matrix, to input values in to the matrix and to display the matrix and its transpose. Free the memory properly.
- 10.b Write a C program to demonstrate calling of a function (like add,subtract,multiply) using a function pointer.
- 11.a Write a C program that displays the position or index in the string S where the string T begins, or – 1 if S doesn't contain T.
- 11.b Write a C program to count the lines, words and characters in a given text.
- 12. Write a menu driven C program that uses functions to perform the following operations on complex numbers stored in a structure:
 - i. Reading a complex number
 - ii. Writing a complex number
 - iii. Addition of two complex numbers
 - iv. Multiplication of two complex numbers
- 13.a Write a C program which copies one text file to another text file and verify the correctness.
- 13.b Write a C program which copies one binary file to another binary file and verify the correctness.
- 13.c Write a command-line C program to reverse the first n characters in a file. (Note: The file name and n are specified on the command line.)
- 14.a Write a C program to display the contents of a file.
- 14.b Write a C program to produce reverse of the content of a text file into another text file and verify the result.
- 14.c Write a C program to merge two text files into a third text file (i.e., the contents of the first file followed by those of the second are put in the third file) and verify the correctness.
- 15. Write an interactive C program that will maintain a list (roll,name,totalmarks) of student records. The menu shall have options like
 - i. Add a new record
 - ii. Delete a record
 - iii. Modify a record
 - iv. Display a selected record
 - v. Display all records
 - vi. Quit
- 16. Write a C Program that removes all comment lines from a C source file.

TEXT BOOKS

1. Programming in C, Pradip Dey& Manas Ghosh, 2ndEd, Oxford University Press,2013 (Chapters 1, 2, 3, 4, 5 excluding 5.2.6, 6.1 to 6.8, 6.10.1, 7, 8, 9, 11)
2. Programming in C–A complete introduction to the C programming language, Stephen G. Kochan 3rdEd., Sams Publishing,2005
3. The C programming language,Brian W.Kernighan,Dennis M.Ritchie,Second edition,Prentice Hall Software Series

REFERENCE BOOKS:

1. *How to Solve it - A New Aspect of Mathematical Method* - G.Polya, 1945, Princeton University Press, (Pages 1-29)
2. *How to Solve it by Computer* – R.G. Dromey, Prentice Hall of India, 1999, (Pages 1-39)
3. *Computer Programming*, E. Balaguruswamy, McGraw Hill India (Pvt Ltd), 2014

(Pages 1.1 to 6.19)

4. *Problem Solving and Program Design in C*, Jeri R. Hanly, Elliot B. Koffman, 7th Edition, Pearson Education, 2013.
5. *C Programming – A Modern Approach*, K. N. King, 2nd Edition, W. W. Norton & Company; New York, 2008.

COURSE OUTCOMES:

- 1: A strong foundation in core Computer Science and Engineering, both theoretical and applied concepts.
- 2: An ability to apply knowledge of mathematics, science, and engineering to real-world problems.
- 3: Ability to model, understand, and develop complex software for System Software as well as Application Software.
- 4: A broad education necessary to understand the impact of Computer Science and Engineering solutions in the scientific, societal, and human contexts.

LEARNING OUTCOMES:

1. Understanding how problems are posed and how they can be analyzed for obtaining solutions.
2. Understanding the fundamentals of C programming.
3. Learning of sequencing, branching, looping and decision making statements to solve scientific and engineering problems.
4. Implementing different operations on arrays and creating and using of functions to solve problems.
5. Ability to design and implement different types of file structures using standard methodology.

B.TECH

II YEAR

I & II SEMESTER

SYLLABUS

**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)**

(AJ3003) MATHEMATICS – III

B.Tech II Year I Sem : ECE & EEE

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COURSE OBJECTIVE:

The main aim of teaching Mathematics – III to develop the thinking ideas of students. In this we made the choice with great care, using past and present techniques, research experience and resulting the temptation to include everything which is important in Engineering Mathematics. Hence the student should learn to recognize the guiding principles and ideas behind the scenes which are more important than formal manipulations.

UNIT – I:

FUNCTIONS OF COMPLEX VARIABLES: Limit- Continuity – Differentiability, Analyticity properties, Cauchy – Riemann equations, harmonic and conjugate harmonic functions, Milne – Thompson method, complex potential functions.

UNIT – II:

COMPLEX INTEGRATION: Line integral – Cauchy’s theorem, Cauchy’s integral formula and derivatives.

Complex Power Series, Radius of convergence – Expansion in Taylor’s series, Maclaurin’s series and Laurent series. Types of singular points – Isolated singular point – pole – essential singular point.

UNIT – III:

CALCULUS OF RESIDUES: Residues-Cauchy’s Residue Theorem, Evaluation of integrals of the type

$$(a) \text{ Improper real integrals } \int_{-\infty}^{\infty} f(x)dx \quad (b) \int_0^{2\pi} f(\cos\theta, \sin\theta)d\theta$$

UNIT – IV:

CONFORMAL MAPPING: Transformation of z-plane to w-plane by a function, conformal transformation Standard transformations – Translation; Magnification and rotation; inversion and reflection, Transformations like e^z , $\log z$, z^2 and Bilinear transformation. Properties of Bilinear transformation.

UNIT – V:

Z –TRANSFORMS AND DIFFERENCE EQUATIONS: Z –transformation, shifting theorems, multiplication by n , Initial value theorem, Final value theorem problems,

Evaluation of inverse Z-transforms, Convolution theorem, solving of difference equations by using z-transforms.

RECOMMENDED TEXT BOOKS

- 1) B.S.Grewal : Higher Engineering Mathematics, Khanna publications, 2009.
- 2) R.K.Jain and S.R.K.Iyengar : Advanced Engineering Mathematics,
- 3) James Ward Brown, Ruel V. Churchill , Complex Variables and Applications, Narosa publishing house, 2008.

REFERENCE BOOK:

- 1) Erwyn Kreyszig : advanced engineering mathematics, John Wiley and sons, 8th edition.
- 2) T.K.V.Iyengar: Engineering Mathematic-III, S.Chand and company.

COURSE OUTCOMES:

By studying complex variable the students identifying ordinary point, singular point and regular point for the given ordinary differential equations. by using the z-transforms students find the particular solution of the differential equation without finding the general solution and students are able to solve the applications of differential equations with boundary and initial conditions.

**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)**

(AJ3205) ELECTROMAGNETIC FIELDS

B.Tech.-II Yr I-Semester:EEE

**L T P C
3 1 0 3**

PRE REQUISITES:

Knowledge of Mathematics, Vector Algebra and Basic concepts Engineering Physics.

OBJECTIVES:

The objective of this course is

- To introduce the concepts of electric field and magnetic fields and their applications
- To utilize the concepts in the development of power transmission and telecommunication lines and electrical machines.

UNIT-I

ELECTROSTATICS:

Types of Co-ordinate systems: Rectangular, Cylindrical, Spherical system.

Electrostatic Fields – Coulomb's Law – Electric Field Intensity (EFI) – EFI due to a line and a surface charge – Work done in moving a point charge in an electrostatic field – Electric Potential – Properties of potential function – Potential gradient – Gauss's law – Application of Gauss's Law – Maxwell's first law, $\text{div } \mathbf{D} = \rho_v$ – Laplace's and Poisson's equations – Solution of Laplace's equation in one variable. Electric dipole – Dipole moment – potential and EFI due to an electric dipole – Torque on an Electric dipole in an electric field.

UNIT-II

DIELECTRICS & CAPACITANCE:

Behavior of conductors in an electric field – Conductors and Insulators – Electric field inside a dielectric material – polarization –Boundary conditions –Conductor and Dielectric Boundary conditions– Capacitance – Capacitance of parallel plates, spherical and co-axial capacitors – with composite dielectrics – Energy stored and energy density in a static electric field – Current density – conduction and Convection current densities – Ohm's law in point form – Equation of continuity

UNIT-III

MAGNETO STATICS:

Static magnetic fields – Biot-Savart's law – Magnetic field intensity (MFI) – MFI due to a straight current carrying filament – MFI due to circular, square and solenoid current carrying wire – Relation between magnetic flux, magnetic flux density and Magnetic field intensity – Maxwell's second Equation $\text{div}(\mathbf{B})=0$.

AMPERE'S LAW & APPLICATIONS:

Ampere's circuital law and its applications viz. MFI due to an infinite sheet of current and a long current carrying filament – Point form of Ampere's circuital law – Maxwell's third equation, $\text{Curl}(\mathbf{H})=\mathbf{Jc}$.

UNIT – IV

FORCE IN MAGNETIC FIELDS AND MAGNETIC POTENTIAL:

Force in Magnetic fields: Magnetic force - Moving charges in a Magnetic field – Lorentz force equation – force on a current element in a magnetic field – Force on a straight and a

long current carrying conductor in a magnetic field – Force between two straight long and parallel current carrying conductors – Magnetic dipole and dipole moment – a differential current loop as a magnetic dipole – Torque on a current loop placed in a magnetic field.

Magnetic Potential and Concept of Inductance: Scalar magnetic potential and its limitations – vector magnetic potential and its properties –vector Poisson’s equations - Self and Mutual inductance – Neumann’s formulae – determination of self-inductance of a solenoid and toroid - mutual inductance between a straight long wire and a square loop wire in the same plane – energy stored and energy density in a magnetic field.

UNIT – V

TIME VARYING FIELDS:

Time varying fields – Faraday’s laws of electromagnetic induction– Maxwell’s fourth equation: $\text{Curl}(\mathbf{E}) = -\mathbf{B}/t$ – Statically and Dynamically induced EMFs – Simple problems - Modification of Maxwell’s equations for time varying fields– Integral and point forms – Concept of Displacement current, Modified form of Ampere’s Law for TV fields, Power in EM Fields and Poynting theorem.

TEXT BOOKS:

1. “Engineering Electromagnetics” by William H. Hayt & John. A. Buck Mc. Graw-Hill Companies, 7th Editon.2009.
2. “Electromagnetic Fields” by Matthew.N.O.Sadiku, Oxford Publications
3. Elements of Electromagnetic Fields by S. P. Seth, Dhanpat Rai Publications.

REFERENCE BOOKS:

1. “Introduction to ElectroMagnetics” by CR Paul and S.A. Nasar, Mc-Graw Hill Publications
2. “ Engineering Electro magnetics” by Nathan Ida, Springer(India) Pvt. Ltd. 2nd Edition
3. “Introduction to Electro Dynamics” by D J Griffiths, Prentice-Hall of India Pvt.Ltd, 2nd edition
4. “Electromagnetics” by Plonsy and Collin
5. “Static and Dynamic Electricity” Smyth.
6. “Electromagnetics” by J P Tewari.
7. “Electromagnetics” by J. D Kraus Mc Graw-Hill Inc. 4th edition 1992.

OUTCOMES:

After completion of this course the student will have the knowledge regarding-

- The relation between the electric field and the magnetic field, about the various laws governing the concepts of these fields.
- The behavior of conductors and dielectrics, their boundary conditions, Maxwell’s equations with respect to electrostatics and magneto statics.
- The concepts related to time varying fields, about scalar and vector magnetic potential, self and mutual inductance.
- The phenomena of energy stored and energy density in electrostatics and magneto statics, the concepts of conduction, convection and displacement current density, their equations, Power in EM fields and Poynting theorem.

**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)**

(AJ3206) ELECTRICAL CIRCUITS-II

B.Tech.-II Yr I- Semester:EEE

**L T P C
4 1 0 4**

PRE-REQUISITES: To learn this course, the students are required to have the basic concepts out of the following subjects:

Electrical Circuits-I, Mathematics-I, Mathematics-II

OBJECTIVES:

This course introduces the basic concepts of circuit analysis which is the foundation for all subjects of the Electrical Engineering discipline. The Emphasis of this course is laid on the basic analysis of circuits which includes

- Circuit analysis using Graph theory
- Analysis of Three Phase balanced and unbalanced circuits
- DC and AC Transient analysis
- Concept of s-domain in electrical circuit analysis
- Analyzing Two-Port Networks using various network parameters
- Concept and Design of various types of passive Filters
- Fourier analysis of A.C. Circuits and Fourier Transforms

UNIT – I:

NETWORK TOPOLOGY

Definitions – Graph – Tree, Basic cut-set and Basic Tie-set matrices for planar networks – Loop and Nodal methods of analysis of Networks with dependent & independent voltage and current sources - Duality & Dual networks.

UNIT – II:

THREE PHASE CIRCUITS:

Three phase circuits: Phase sequence – Star and delta connection – Relation between line and phase voltages and currents in balanced systems – Analysis of balanced and Unbalanced 3 phase circuits – Measurement of active and reactive power.

UNIT – III:

TRANSIENT ANALYSIS:

Transient response of R-L, R-C, R-L-C circuits (Series and Parallel combinations) for D.C. and sinusoidal excitations – Initial conditions – Classical method and Laplace transforms methods of solutions.

Transient response of the above circuits for different inputs such as step, ramp, pulse and impulse by using Laplace transforms method.

UNIT – IV:

NETWORK FUNCTIONS AND NETWORK PARAMETERS:

Network functions: Driving point and transfer impedance and admittance functions- poles and zeros of network function–necessary conditions for driving point functions and transfer functions.

Network Parameters: Two port Network parameters – Z, Y, ABCD and Hybrid parameters and their inter-relations– 2-port network parameters using transformed variables.

UNIT – V:

FILTERS AND FOURIER ANALYSIS OF A.C. CIRCUITS:

Filters - Introduction to filters –low pass – high pass and band pass – RC, RL, filters-constant K and m derived filters and composite filter design

Fourier analysis of A.C. Circuits – Fourier Theorem, consideration of symmetry, exponential form of Fourier series, line and phase angle spectra, Fourier integrals and Fourier transforms properties of Fourier transforms.

TEXT BOOKS:

1. Engineering circuit analysis – by William Hayt and Jack E. Kemmerly, Mc Graw Hill Company, 6th edition.
2. Fundamentals of Electric Circuits by Charles Alexander and Mathhew N.O. Sadiku, 5th Edition, Mc Graw Hill.
3. Electrical Circuits by David .A. Bell Oxford University Press, 7th Edition.
4. Networks and systems by D. Roy Chowdary, New Age International publishers
5. Circuit Theory by A. Chakrabarthy, Dhanpat Rai & Sons.

REFERENCE BOOKS:

1. Network Analysis by Van Valkenburg, PHI.
2. Network Theory by N.C. Jagan & C. Lakshminarayana, B.S Publications.
3. Electric Circuit theory by K. Rajeswaran, Pearson Education, 2004.
4. Network Analysis by C.K. Mithal, Khanna Publishers.

OUTCOMES:

After going through this course the student gets a thorough knowledge on

- Network topology
- Analysis of Balanced and Unbalanced Three-phase systems
- Measurement of power in 3-Phase Systems using wattmeters
- Transient analysis of AC and DC networks; Solution of problem using Differential Equation and Laplace transform approach
- Different types of network functions
- Two–port network parameters
- Operation and design of various filter circuits
- Fourier transforms
- Analysis of AC circuit through Fourier series

With which he/she can be able to apply the above conceptual things to the real world electrical and electronics problems and applications.

**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)**

(AJ3208) ELECTRICAL MACHINES – I

B.Tech.- II Yr I-Semester:EEE

**L T P C
4 1 0 4**

PRE REQUISITES:

Electrical Circuits, Magnetic Fields.

OBJECTIVES:

- To introduce the concept of rotating machines and the principle of Electro mechanical energy conversion.
- To understand the functioning of different types of D.C. generators and study their performance.
- To study the working principles of various types of D.C. motors and their load characteristics, starting and methods of speed control.
- To estimate the various losses occurring in D.C. machines and to study the different testing methods to arrive at their efficiency.

UNIT – I:

ELECTROMECHANICAL ENERGY CONVERSION:

Electromechanical Energy Conversion - Forces and torque in magnetic field systems - Energy balance - Energy and force in a singly excited magnetic field system, determination of magnetic force, Co – Energy - Multi excited magnetic field systems.

UNIT – II:

D.C. GENERATORS CONSTRUCTION & OPERATION:

D.C. Generators – Principle of operation – Action of commutator – constructional features – armature windings – lap and wave windings – simplex and multiplex windings – use of laminated armature – E.M.F Equation –Problems.

Armature reaction: Cross magnetizing and de-magnetizing AT/pole – compensating winding – commutation – reactance voltage – methods of improving commutation.

UNIT – III:

TYPES OF D.C GENERATORS & CHARACTERISTICS:

Methods of Excitation – separately excited and self-excited generators – build-up of E.M.F - critical field resistance and critical speed - causes for failure to self-excite and remedial measures. Load characteristics of shunt, series and compound generators. Applications, Problems with Practical Ratings.

Parallel operation of D.C series generators - Use of equalizer bar and cross connection of field windings - Load sharing.

UNIT – IV:

D.C MOTORS OPERATION & SPEED CONTROL:

D.C Motors – Principle of operation – Back E.M.F. - Torque equation – characteristics and application of shunt, series and compound motors – Armature reaction and commutation. Applications, Problems with Practical Ratings.

Speed control of D.C. Motors: Armature voltage and field flux control methods. DC Motor starters (3 point and 4 point starters).

UNIT – V:

TESTING OF D.C. MACHINES:

Losses – Constant & Variable losses – calculation of efficiency – condition for maximum efficiency.

Methods of Testing – direct, indirect and regenerative testing – Brake test – Swinburne's test
Hopkinson's test – Field's test-separation of stray losses in a D.C. motor test.

TEXT BOOKS:

1. Electrical Machines – P.S. Bimbra., Khanna Publishers
2. Electric Machines by I. J. Nagrath & D. P. Kothari, Tata Mc Graw – Hill Publishers, 3rd edition, 2004.
3. Theory and Performance of Electrical Machines by J. B. Gupta, S. K. Kataria and Sons.

REFERENCE BOOKS:

1. Performance and Design of D.C Machines – by Clayton & Hancock, BPB Publishers
2. Electric Machinery – A. E. Fitzgerald, C. Kingsley and S. Umans, Mc Graw-Hill Companies, 5th edition
3. Electromechanical Energy Conversion with Dynamics of Machines – by R. D. Begamudre, New Age International (P) Ltd., Publishers, 2nd edition, 1998.
4. Electric Machines – M. V. Deshpande, PHI Learning Pvt.Ltd.

OUTCOMES:

After going through this course the student gets a thorough knowledge on.

- Principle of Energy Conversions.
- Construction and Operation of Generators & Motors.
- Characteristics of Different Generators & Motors, Remedies to overcome the Problems of failure of Generation.
- Applications and Speed control of DC Motors.
- Testing of DC Machines.

**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)**

(AJ3508) OBJECT ORIENTED PROGRAMMING & DATA STRUCTURES

B.Tech.- II Yr I-Semester: EEE

L/T/P C

3/0/0 3

OBJECTIVES:

To provide a comprehensive working knowledge on the object oriented language C++ and to implement abstract data types, linear and nonlinear data structures for problem solving. To provide a foundation on generic programming based on over loading concepts, inheritance and virtuality. To inculcate ability to grasp the behaviour of data structures such as stacks, queues, trees, hash tables, search trees, graphs and their representation and to apply them in problem solving. To provide a working knowledge on searching and sorting techniques and to write programs to solve problems on arrays, linked lists, stacks, queues, trees, graphs, hash tables and search trees.

UNIT-I:

C++ Overview- Class Definition, Objects, Class Members, Access Control, Class Scope, Constructors and destructors, parameter passing methods, Inline functions, static class members, this pointer, friend functions, dynamic memory allocation and deallocation (new and delete), exception handling. Function Over Loading, Operator Overloading,

UNIT-II:

Generic Programming- Function and class templates, Inheritance basics, base and derived classes, inheritance types, base class access control, runtime polymorphism using virtual functions, abstract classes, streams I/O.

UNIT-III:

Basic data structures- The list ADT, Stack ADT, Queue ADT, Implementation using template classes in C++. Linked list operations insertion, deletion and searching. Hash table representation, hash functions, collision resolution-separate chaining, open addressing-linear probing, quadratic probing, double hashing, rehashing, extendible hashing, comparison of hashing and skip lists.

UNIT-IV:

Search Trees: Binary Search Trees, Definition, ADT, Implementation, Operations- Searching, Insertion and Deletion, AVL Trees, Definition, Height of an AVL Tree, Operations _ Insertion, Deletion and Searching. Trees definitions, B-Trees, B-Tree of order m, height of a B-Tree, insertion, deletion and searching.

UNIT-V:

Graphs: Basic terminology, representations of graphs, graph search methods DFS, BFS, Suffix tries.

TEXT BOOKS:

1. *Object oriented programming with C++*, E. Balagurusamy, Cengage Learning ,Tata McGraw Hill Education ,3rd Edition.
2. Data structures, Algorithms and Applications in C++, S.Sahni, University Press (India) Pvt.Ltd, 2nd edition, Universities Press Orient Longman Pvt. Ltd.
3. Classic Data structures by Samantha, PHI Learning Pvt.Ltd,2nd Edition.

REFERENCES:

1. Problem solving with C++, The OOP, Fourth edition, W.Savitch, Pearson education.
2. Data structures and Algorithm Analysis in C++, Mark Allen Weiss, Pearson Education. Ltd., Second Edition.
3. Data structures and algorithms in C++, 3rd Edition, Adam Drozdek,Cengage Learning.
4. Data Structures Using C++, D.s. Malik,Cengage Learning, India Edition.
5. Mastering Algorithms with C,K.Loudon,O'Reilly,SPD PVT.Ltd.
6. An introduction to Data structures and algorithms, J.A.Storer,Springer.
7. *Data Structures: A Pseudocode Approach with C++*, Richard F Gilberg, Behrouz A Forouzan, Cengage Learning
8. Data structures and Algorithms in C++, Michael T.Goodrich, R.Tamassia and Mount, Wiley student edition, John Wiley and Sons.

COURSE OUTCOMES:

- CO-1: A strong foundation in core Computer Science and Engineering, both theoretical and applied concepts.
- CO-2: An ability to apply knowledge of mathematics, science, and engineering to real-world problems.
- CO-3: Ability to model, understand, and develop complex software for System Software as well as Application Software.
- CO-4: An ability to communicate effectively, both in writing and oral.
- CO-5: A recognition of the need for, and an ability to engage in life-long learning.

LEARNING OUTCOMES:

1. Understanding of fundamental concepts of abstract data types and general standard data structures.
2. Ability to design linear data structures stacks, queues and linked lists.
3. Ability to design nonlinear data structures, trees and graphs, and to implement their operations.
4. Ability to implement different searching and sorting techniques.
5. Ability to apply different searching and sorting techniques for real world problems..

**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)**

(AJ3207) ELECTRICAL CIRCUITS LAB

B.Tech. -II Yr I-Semester:EEE

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The following experiments are required to be conducted as compulsory experiments:

1. Verification of Kirchhoff's laws and Tellegen's Theorem
2. Verification of Thevenin's, Norton's and Maximum Power Transfer Theorems.
3. Verification of Superposition and Reciprocity Theorems.
4. Locus Diagrams of RL and RC Series Circuits.
5. Series and Parallel Resonance.
6. Determination of Self, Mutual Inductances and Coefficient of coupling.
7. Determination of Open circuit, Short circuit and ABCD parameters of two port networks.
8. Measurement of active and reactive powers of a 3-phase network using two wattmeter method.

In addition to the above eight experiments, at least any two of the experiments from the following list are required to be conducted:

1. Verification of Compensation and Millman's Theorems.
2. Verification of RMS value of complex wave.
3. Relation between voltage and current in star and delta networks.
4. Verification of Time response of first order (R-C & R-L) and Second order (RLC) networks for periodic non-sinusoidal inputs – Time constant and Steady state error determination.

**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)**

(AJ3509) OBJECT ORIENTED PROGRAMMING & DATA STRUCTURES LAB

B.Tech. -II Yr I-Semester: EEE

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OBJECTIVES:

To provide a comprehensive working knowledge on the object oriented language C++ and to provide implementation experience on abstract data types, linear and nonlinear data structures for problem solving. To provide a working knowledge on generic programming based on over loading concepts, inheritance and virtuality. To inculcate ability to grasp the behaviour of data structures such as stacks, queues, trees, hash tables, search trees, graphs and their representation and to apply them in problem solving. To provide an application oriented working knowledge on searching and sorting techniques and to write programs to solve problems on arrays, linked lists, stacks, queues, trees, graphs, hash tables and search trees.

SYLLABUS CONTENT

1. Write a C++ program to demonstrate class.
2. Write a C++ program on constructor.
3. Write a C++ program on inline functions.
4. Write a C++ program on this pointer.
5. Write a C++ program on function overloading.
6. Write a C++ program on operator overloading.
7. Write a C++ program that illustrates how run time polymorphism is achieved.
8. Write a C++ program on Multiple inheritance.
9. Write a C++ program to implement all the functions of a dictionary ADT.
10. Write a C++ program for single linked list operations.
11. Write a C++ program for hashing with quadratic programming.
12. C++ programs using class templates to implement the following using an array.
a) Stack ADT b) Queue ADT
13. Write C++ programs using class templates to implement the following using a singly linked list.
a) Stack ADT b) Queue ADT
14. Write C++ programs, using class templates, that use non-recursive functions to traverse the given binary tree in
a) preorder b) inorder c) postorder.
15. Write C++ programs, using class templates, that use recursive functions to traverse the given binary tree in
a) preorder b) inorder c) postorder.
16. Write a C++ program using class templates to perform the following operations:
a) Insert an element into a binary search tree.
b) Delete an element from a binary search tree.
c) Search for a key element in a binary search tree.
11. Write C++ programs using class templates for the implementation of bfs and dfs for a given graph.

TEXT BOOKS:

1. *Object oriented programming with C++*, E. Balagurusamy, Cengage Learning ,Tata McGraw Hill Education ^{3rd} Edition.
2. Data structures a pseudo code approach with c++, Indian edition, R.F.Gilberg and B.A.Forouzan Cengage Learning.
3. Programming Priniciples and Practice using C++, B.Stroustrup, Addition-Wiesly (Pearson Education)
4. Data Structures and STL,W.J.Collins,mc Graw Hill,International Edition.
5. Data Structures and Algorithms with OODesign patterns in C++,B.R.Priess,John Wiley &sons.
6. The Art,Philosophy and Science of OOP with C++,Rick Miller,SPD.
7. C++ for Programmers ,P.J.Deitel and H.M.Deitel,PHI/Pearson.

COURSE OUTCOMES:

- CO-1: A strong foundation in core Computer Science and Engineering, both theoretical and applied concepts.
- CO-2: An ability to apply knowledge of mathematics, science, and engineering to real-world problems.
- CO-3: Ability to model, understand, and develop complex software for System Software as well as Application Software.
- CO-4: An ability to communicate effectively, both in writing and oral.
- CO-5: A recognition of the need for, and an ability to engage in life-long learning.

LEARNING OUTCOMES:

1. Understanding of fundamental concepts of abstract data types and general standard data structures.
2. Ability to design linear data structures stacks, queues and linked lists.
3. Ability to design nonlinear data structures, trees and graphs, and to implement their operations.
4. Ability to implement different searching and sorting techniques.
5. Ability to apply different searching and sorting techniques for real world problems..

**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)**

(AJ3209) ELECTRICAL MACHINES LAB - I

B.Tech.-II Yr I-Semester:EEE

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The following experiments are required to be conducted compulsory experiments:

1. Magnetization characteristics of DC shunt generator.
2. Load test on DC shunt generator.
3. Load test on DC series generator.
4. Load test on DC compound generator.
5. Swinburne's test on DC Shunt Machine and Speed control of DC shunt motor.
6. Brake test on DC compound motor.
7. Hopkinson's tests on DC shunt machines.
8. Field's test on DC series machines.

In addition to the above eight experiments, at least any two of the experiments from the following list are required to be conducted:

9. Brake test on DC shunt motor.
10. Retardation test on DC shunt motor.
11. Separations of constant losses in DC shunt motor.

**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)**

**L T P C
3 0 0 2***

**Value Education, Human Rights and Legislative Procedures
(AJMC02)**

Module 1: Values and Self Development-Social values and individual attitudes, Work ethics, Indian vision of humanism, Moral and non moral valuation, Standards and principles, Value judgments. Importance of cultivation of values, Sense of duty, Devotion, Self reliance, Confidence, Concentration, Truthfulness, Cleanliness, Honesty, Humanity, Power of faith, National unity, Patriotism, Love for nature, Discipline.

Module 2: Personality and Behavior Development- Soul and scientific attitude, God and scientific attitude, Positive thinking, Integrity and discipline, Punctuality, Love and kindness, Avoiding fault finding, Free from anger, Dignity of labor, Universal brotherhood and religious tolerance, True friendship, Happiness vs. suffering love for truth, Aware of self destructive habits, Association and cooperation, Doing best, Saving nature.

Module 3: Character and Competence- Science vs. God, Holy books vs. blind faith, Self management and good health, Science of reincarnation, Equality, Nonviolence, Humility, Role of women, All religions and same message, Mind your mind, Self control, Honesty, Studying effectively.

Module 4: Human Rights- Jurisprudence of human rights nature and definition, Universal protection of human rights, Regional protection of human rights, National level protection of human rights, Human rights and vulnerable groups.

Module 5: Legislative Procedures- Indian constitution, Philosophy, fundamental rights and duties, Legislature, Executive and Judiciary, Constitution and function of parliament, Composition of council of states and house of people, Speaker, Passing of bills, Vigilance, Lokpal and functionaries.

Text Books:

1. Chakraborty, S.K., Values and Ethics for Organizations Theory and Practice, Oxford University Press, New Delhi, 2001.
2. Kapoor, S.K., Human rights under International Law and Indian Law, Prentice Hall of India, New Delhi, 2002.
3. Basu, D.D., Indian Constitution, Oxford University Press, New Delhi, 2002.

Reference Books:

1. Frankena, W.K., Ethics, Prentice Hall of India, New Delhi, 1990.
2. Meron Theodor, Human Rights and International Law Legal Policy Issues, Vol. 1 and 2, Oxford University Press, New Delhi, 2000.

**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)**

(AJ4210) POWER SYSTEMS-I

B.Tech.-II YrII-Semester:EEE

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PRE REQUISITES:

Basics of Electrical Circuits, Electrical Machines and Thermal & Hydro Prime Movers.

OBJECTIVES:

- Electrical Power Generation by Conventional Energy Sources.
- Concepts of DC and AC Distribution, Voltage drop calculations

This course concerns the generation of power along with the economic aspects.

UNIT-I:

Thermal Power Stations:

Line diagram of Thermal Power Station (TPS) showing paths of coal, steam, water, air, ash and flue gasses. - Brief description of TPS components: Economizers, Boilers, Super heaters, Condensers, Chimney and cooling towers. Numerical Problems.

Nuclear Power Stations:

Nuclear Power Stations: Nuclear Fission and Chain reaction. - Nuclear fuels. - Principle of operation of nuclear reactor.-Reactor Components: Moderators, Control rods, Reflectors and Coolants. - Radiation hazards: Shielding and Safety precautions. - Types of Nuclear reactors and brief description of PWR, BWR and FBR. Numerical Problems.

UNIT –II:

Gas and Hydroelectric Power Stations:

Gas Power Stations: Principle of Operation and Components. Elements of hydro electric power station-types-concept of pumped storage plants-storage requirements, mass curve (explanation only) estimation of power developed from a given catchment area; heads and efficiencies. Numerical Problems.

UNIT-III:

D.C. Distribution Systems:

Classification of Distribution Systems.- Comparison of DC vs. AC and Under-Ground vs. Over- Head Distribution Systems.- Requirements and Design features of Distribution Systems.-Voltage Drop Calculations (Numerical Problems) in D.C Distributors for the following cases: Radial D.C Distributor fed one end and at the both the ends (equal/unequal Voltages) and Ring Main Distributor.

A.C. Distribution Systems:

Voltage Drop Calculations (Numerical Problems) in A.C. Distributors for the following cases: Power Factors referred to receiving end voltage and with respect to respective load voltages.

UNIT-IV:

Substations, Power Factor Control and Voltage Control:

Substations: Classification of substations - Indoor & Outdoor substations: Substations layout showing the location of all the substation equipment. Bus bar arrangements in the Sub-Stations: Simple arrangements like single bus bar, sectionalized single bus bar, main and transfer bus bar system with relevant diagrams.

Power Factor Control: Causes and disadvantages of Low Power factor-Methods of improving power factor-Most economical power factor-Numerical Problems.

Voltage Control: Dependency of Voltage on Reactive Power Flow - Methods of Voltage Control.

UNIT-V:

Economic Aspects of Power Generation:

Load curve, load duration and integrated load duration curves-load, demand, diversity, capacity, utilization and plant use factors- Numerical Problems.

Tariff:Costs of Generation and their division into Fixed, Semi-fixed and Running Costs. Desirable Characteristics of a Tariff-Objectives of Tariff-Types of Tariff-Numerical Problems.

TEXT BOOKS:

1. Generation, Distribution and Utilization of electrical energy by C.L.Wadhwa, New age International Publishers.
2. Elements of Electrical Power Station Design, 3rd Edition, Wheeler. Pub.1998-M.V.Deshpande.
3. Power System Engineering- by R.K.Rajput Laxmi Publications (P) Limited, New Delhi 2006.

REFERENCE BOOKS:

1. Principles of Power Systems by V.K Mehta and Rohit Mehta S.CHAND& COMPANY LTD., New Delhi 2004.
2. Electrical Power Generation, Transmission and Distribution by S.N.Singh., PHI, 2003.
3. Hand book of Switchgear (BHEL) Tata Mc-Graw Hill Publication 2009.

OUTCOMES:

After going through this course the student gets

- Knowledge on the thermal, nuclear, gas and Hydal power plants operation, AC and DC distribution, voltage drop calculations
- Air insulated indoor/outdoor substations, operation.
- Voltage control and power factor improvement techniques, economics aspects of power generation
- Different types of tariff

With which he/she can be able to apply the above conceptual things to real-world electrical and electronics problems and applications.

**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)**

(AJ4211) ELECTRICAL MACHINES – II

B.Tech.-II Yr II-Semester:EEE

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PRE REQUISITES:

Electrical Circuits and Electrical Machines – I

OBJECTIVES:

- To study the theory and performance of various Transformers
- To study the testing techniques of single phase transformer
- To study theory of operation and performance characteristics of poly phase induction motors
- To study the theory of speed control techniques of 3-phase induction motor.

UNIT I:

SINGLE PHASE TRANSFORMERS -CONSTRUCTION & OPERATION:

Single phase transformers – constructional details –minimization of hysteresis and eddy current losses –e.m.f equation –operation on no load and on load – phasor diagrams. Equivalent circuit –losses and efficiency – regulation. All day efficiency –effect of variation of frequency & supply voltage on iron losses-Numerical Problems

UNIT II:

TESTING OF SINGLE PHASE TRANSFORMER:

OC and SC tests- predetermination of efficiency and regulation- Sumpner's test- – Separation of core losses in a transformer . Parallel operation with equal and unequal voltage ratios-Numerical Problems

UNIT III:

AUTO & POLYPHASE TRANSFORMERS:

Autotransformers –equivalent circuit – comparison with two winding transformers. Polyphase transformers –Polyphase connections- Y/Y, Y/ Δ , Δ /Y, Δ / Δ , and open Δ . Third harmonics in phase voltages –three winding transformers –tertiary windings- determination of Z_p , Z_s , and Z_t transients in switching –off load and on load tap changing transformers, Scott connection. - Numerical Problems

UNIT – IV:

POLYPHASE INDUCTION MOTORS:

Polyphase induction motors-construction details of cage and wound rotor machines-production of rotating magnetic field - principle of operation - rotor EMF and rotor frequency - rotor reactance, rotor current and pf at standstill and during operation. -Numerical Problems

Characteristics of Induction Motors:

Rotor power input, rotor copper loss and mechanical power developed and their inter relation-torque equation - expressions for maximum torque and starting torque – torque-slip characteristics - equivalent circuit - Phasor diagram - crawling and cogging. -Numerical Problems

UNIT – V:

CIRCLE DIAGRAM & SPEED CONTROL OF INDUCTION MOTORS:

No-load Test and Blocked rotor test –Predetermination of performance using Circle Diagram-Numerical Problems -Methods of starting-Starting current and Torque calculations.

Speed Control Methods:

Speed control-change of voltage, change of frequency, V/f, injection of an EMF into rotor circuit – Numerical Problems- Induction generator – principle of operation and its role in electrical systems.

TEXT BOOKS:

1. Electrical machines-PS Bhimbra, Khanna Publishers.
2. Electric Machines –by I.J.Nagrath & D.P.Kothari, Tata McGraw Hill, 7th Edition.2009
3. Theory and Performance of Electrical Machines – J.B. Gupta, S.K. Kataria & Son's Publications
4. Performance and Design of AC Machines-M.G. Say. BPB Publishers.

REFERENCE BOOKS:

1. Electric machinery - A.E. Fitzgerald, C.Kingsley and S.Umans, Mc Graw Hill Companies, 5th edition
2. Theory of Alternating Current Machinery- by Langsdorf, Tata McGraw-Hill Companies, 2nd edition.
3. Electrical Machines – M.V Deshpande, Wheeler Publishing

OUTCOMES:

After going through this course

- The student gets a thorough knowledge on, construction operation characteristics and testing of different types of transformers.
- Testing (concept of circle diagram) and speed control method of poly-phase induction motor
- He/she can be able to apply the above conceptual things to real-world electrical and electronics problems and applications.

**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)**

(AJ4404) Switching Theory and Logic Design

B.Tech.- II Yr I Semester : ECE & CSE

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COURSE OBJECTIVE:

- This Subject exposes the students to learn Digital Fundamentals
- After studying this subject the student will be able to Design, Analyze and Interpret Combinational and Sequential Digital Circuits.

UNIT- I:

NUMBER SYSTEMS & BOOLEAN ALGEBRA

Binary Numbers, Number base Conversion, Octal and Hexadecimal Numbers, Complements, Signed Binary Numbers, Binary Codes, Boolean Algebra basic theorems and properties, Boolean functions, canonical and standard forms.

UNIT-II:

GATE LEVEL IMPLEMENTATION AND MINIMIZATION

Basic Logic gates and Universal gates, Simplification of functions using Karnaugh map (Four & Five Variable) and QuineMcCluskey Method, Boolean function Implementation, Gate level Implementation.

UNIT-III:

COMBINATIONAL LOGIC DESIGN

Combinational Circuit, Analysis Procedure, Design Procedure, Examples of Combinational Digital Circuits(Adders, Subtractor, Adder-Subtractor etc.) Hazards in Combinational Circuits, Hazards free realization.

UNIT-IV:

SEQUENTIAL LOGIC DESIGN

Introduction to sequential Circuits: Latches and Flip-Flops(RS,JK, D, T and Master Slave), Design of Clocked Flip-Flop, Flip-Flop Conversion,

Counters: Design of Single Mode and Multi Mode Counters, Ripple Counters, Synchronous Counters.

Registers: Shift Registers, Shift Register Counters and Random Sequence Generators.

UNIT-V:

DESIGN & ANALYSIS OF SEQUENTIAL CIRCUITS

Introduction to Mealy and Moore Design, State Diagrams, Analysis and Design of Synchronous sequential Circuits: Finite State Machines, State Reduction, Minimization and Design of Next state Decoder.

TEXT BOOKS :

1.Maris Mano: "Digital Design" Prentice Hall 1993.

REFERENCE:

1.John F Wakerly: "Digital Design : Principles and Practices", Prentice-Hall, 2nd Ed., 2002

**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)**

(AJ4417) IC Applications

B.Tech.-II Yr II-Semester:EEE

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**UNIT I:
INTEGRATED CIRCUITS:**

Classification. Chip Size and Circuit Complexity, Classification of Integrated Circuits. Standard TTL NAND Gate-Analysis & Characteristics, TTL Open Collector Outputs. Tristate TTL, MOS & CMOS open drain and tristate outputs, Comparison of Various Logic Families. IC interfacing- TTL driving CMOS & CMOS driving TTL Ideal and Practical Op-Amp, Op-amp characteristics-DC and AC Characteristics. 741 Op-Amp and its Features, Modes of operation-inverting, non-inverting, differential.

**UNIT II:
OP-AMP and APPLICATIONS:**

Basic information of Op-Amp, Ideal and Practical Op-Amp, Op-amp characteristics-DC and AC Characteristics. 741 Op-Amp and its Features, Modes of operation-inverting, non-inverting, differential.

Basic Applications of Op-Amp, Instrumentation Amplifier, AC Amplifier, V to I and I to V Converters, Sample & Hold Circuits. Differentiators and Integrators. Comparators. Schmitt Trigger. Multivibrators, Introduction to Voltage Regulators Features of 723 Regulators.

**UNIT III:
ACTIVE FILTERS & OSCILLATORS**

Introduction, First Order Low Pass. High Pass and Band Pass Filters, Active Band Reject and All Pass Filters.

Principle of Operation and Types of Oscillators – RC, Wien Bridge and quadrature type. Waveform Generators - Triangular. Saw Tooth, Square Wave and VCO.

**UNIT IV:
TIMERS & PHASE LOCKED LOOPS**

Introduction to 555 Timer, Functional Diagram, Monostable and Astable Operations and Applications, Schmitt Trigger, PLL- Introduction, Block Schematic, Principles and Description of individual Blocks of 565, VCO.

**UNIT V:
D-A AND A- D CONVERTERS**

Introduction, Basic DAC Techniques - Weighted Resistor Type. R-2R Ladder Type, inverted R-2R Type and IC 1408 DAC. Different types of ADCs - Parallel Comparator Type. Counter Type. Successive Approximation Register Type and Dual Slope Type DAC and ADC Specifications.

TEXT BOOKS:

1. Linear Integrated Circuits -D. Roy Chowdhury, New Age International (p)Ltd.
2. Op-Amps & Linear ICs - Ramakanth A. Gayakwad.

REFERENCE BOOKS:

1. Op-Amps and Linear Integrated Circuits, R.F. Coughlin & Fredrick F. Driscoll, PHI.
2. Operational Amplifiers and Liner Integrated Circuits: theory & applications, Denton J. Daibey, TMH
3. Design with operational amplifiers & Analog Integrated Circuits, Serigo Franco. McGraw Hill.
4. Digital Fundamentals - Floyd and Jain, Pearson Education.

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(AJ4110) FLUID MECHANICS & HYDRAULIC MACHINERY

B.Tech.- II Yr – II Semester:EEE

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OBJECTIVES:

- O1: Identify and obtain values of fluid properties and relationship between them.
- O2: Understand the principles of continuity, momentum, and energy as applied to fluid motion.
- O3: Describe the operating characteristics of hydraulic machinery (pumps and turbines) and The factors affecting their operation and specifications, as well as their operation in a system.
- O4: Study and Analyze different types and elements of Hydro Electric Power Plants.

UNIT – I

INTRODUCTION:

Dimensions and units- Physical Properties of Fluid specific gravity, Viscosity, Surface Tension, Vapor Pressure and their influences on fluid motion pressure at a point, Pascal's law, Hydrostatic Law- Atmospheric, Gauge and Vacuum pressure-measurement of pressure. Pressure gauges.

FLUID KINEMATICS:

Description of fluid flow, Stream line, Path Line and Streak lines and stream tube. Classification of flows: Steady, unsteady, uniform, non-uniform, laminar, turbulent, rotational and irrotational flows-Equation of continuity for one, two , three dimensional flows- stream and velocity potential functions, flow net analysis.

UNIT – II

FLUID DYNAMICS AND MEASUREMENTS OF FLOW:

Surface and body forces- Euler's and Bernoulli's Equation for flow along a stream line for 3-D flow,(Navier –Stokes Equations (Explanatory) Momentum equation and it's application-forces on pipe bend, Pitot tube, Venturi - meter and Orifice meter-Classification of Orifices, flow over rectangular, triangular and trapezoidal and stepped notches-Broad crested weirs.

CLOSED CONDUCT FLOW: Reynold's experiment-Characteristic of laminar & Turbulent flows. Laws of fluid friction-Darcy's equation, variation of friction factor with Reynold's number-Moody's Chart, Minor Losses-pipes in series-pipes in parallel-total energy line and hydraulic gradient line. Pipe network problems flow between parallel plates, flow through long tubes, flow through inclined tubes.

UNIIT – III

BASICS OF TURBO MACHINERY:

Hydrodynamic force of jets on stationary and moving flat, inclined and curved vanes, jet striking centrally and at tip, velocity triangles at inlet and outlet, expression for work done and efficiency-angular momentum principles, Applications to radial flow turbines. Layout of a typical hydropower installation- Heads and efficiencies

UNIT – IV

HYDRAULIC TURBINES:

Classification of turbines-Pelton wheel-Francis turbine-Kaplan turbine-working, working proportions, velocity diagram, work done and efficiency, hydraulic design, draft tube-theory and function efficiency. Governing of turbines-surge tanks-unit and specific turbines-unit speed-unit quantity-unit power-specific speed performance characteristics-geometric similarity-cavitation.

UNIT – V

CENTRIFUGAL PUMP:

Installation details-classification-types work done-Manometric head-minimum starting speed-losses and efficiencies-specific speed multistage pumps-pumps in parallel-performance of pumps-characteristic curves-NPSH-water hammer.

HYDROELECTRIC POWER STATION:

Elements of hydro electric power station-type –concept of pumped storage plants-storage requirements,curve(explanatory only) estimation of power developed from a given catchment area, heads and efficiencies.

TEXT BOOKS:

1. F M White “*Fluid Mechanics*”, Tata Mc Graw Hill Publishers.2011.
2. Modi &Seth “*Fluid Mechanics& Hydraulic Machines*”, Standard book house.

REFERENCE BOOKS:

1. Dr.R.K.Bansal “*Fluid Mechanics and Hydraulic Machines*”,Laxmi Publications.
2. Rajput “*Fluid Mechanics and Hydraulic Machines*”,
3. A.K.Mohanty “*Fluid Mechanics*”, Prentice hall of India Pvt Ltd.
4. Banga & Sharma “*Hydraulic Machines*”, Khanna Publications

OUTCOMES :

After completion of this course, students will be able to....

- O1: Apply fundamental knowledge of mathematics to modeling and analysis of fluid flow problems in civil and environmental engineering.
- O2: Conduct Experiments (in teams) in pipe flows and open channel flows and documenting them in engineering reports.
- O3: Understand the basics of hydraulic machinery and their operation design in water distribution systems.
- O4: Select and design appropriate pumps, classification, identify and design of hydraulic turbines and their application in Hydro Electric Power Plants

**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)**

(AJ4112) FLUID MECHANICS & HYDRAULIC MACHINERY LAB

B.Tech.-II Yr – II Semester:EEE

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OBJECTIVES:

- O1: Compare the result of analytical models introduced in lecture to the actual behavior of real fluid flow
- O2: Discuss and practice standard measurement techniques of fluid mechanics and their applications.
- O3: Familiarize the students with the components and working principles of the Hydraulic machines-different types of turbines, Pumps, and other miscellaneous hydraulics machines.
- O4: Learn and practice writing technical reports and to work on small design projects.

LIST OF EXPERIMENTS:

1. Calibration of Venturimeter & Orificemeter
2. Determination of Coefficient of discharge for a small orifice/Mouthpiece by constant head method.
3. Calibration of contracted Rectangular Notch and /Triangular Notch
4. Determination of friction factor of a pipe.
5. Determination of Coefficient for minor losses.
6. Verification of Bernoulli's equation.
7. Impact of jet on Vanes.
8. Study of Hydraulic jump.
9. Performance test on pelton wheel Turbine.
10. Performance test on Francis Turbine
11. Performance test on Kaplan Turbine.
12. Performance characteristic of a single stage/multi stage centrifugal pump.
13. Performance characteristic of a reciprocating pump.

OUTCOMES:

- O1: Utilize basic measurement techniques of fluid mechanics and able to differentiate among measurement techniques their relevance and applications.
- O2: Demonstrate Practical understanding of minor and friction losses in pipe flows.
- O3: Demonstrate practical working of hydraulic machines-different types of Turbines, Pumps, and other miscellaneous hydraulics machines.
- O4: Compare the results of analytical models introduced in lecture to the actual behavior of real fluid flows and draw correct and sustainable conclusions.

**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)**

(AJ4246) BASIC ELECTRICAL SIMULATION LAB

B.Tech.-II Yr II-Semester:EEE

L T P C

0 0 3 2

The following experiments are required to be conducted as compulsory experiments using PSPICE/MATLAB software:

1. Nodal Analysis.
2. Simulation of DC Circuits.
3. DC Transient response.
4. Simulation of Frequency response of second order RLC series circuit.
5. Simulation of Time response of second order RLC series circuit.
6. Simulation of Frequency response of second order RLC Parallel circuit
7. Simulation of Time response of second order RLC Parallel circuit.
8. Verification of superposition and Thevenin's Theorems.
9. Generation of Various Signals and Sequences (Periodic and A periodic), such as Unit Impulse, Unit Step, Square, Saw tooth, Triangular, Sinusoidal, Ramp, Sine waves.

In addition to the above nine experiments, at least any three of the experiments from the following list are required to be conducted using PSPICE/MATLAB software:

1. Computation of Unit sample, Unit step and Sinusoidal responses of the given LTI system and verifying its physical reliability and stability properties.
2. Finding the Fourier Transform of a given signal and plotting its magnitude and phase spectrum.
3. Waveform Synthesis using Laplace Transform.
4. Locating the Zeros and Poles and plotting the Pole-Zero maps in S-plane and Z-Plane for the given transfer function.
5. Locus Diagram of RL & RC circuits with variation of R, L, C
6. Verification of Maximum Power Transfer Theorem.

**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)**

(AJ4421) IC APPLICATIONS AND HDL SIMULATION LAB

B.Tech.-II Yr II – Semester:EEE

L T/P/D C
- -/3/- 2

Note: *To perform any sixteen experiments (choosing at least seven from each part).*

PART - I: LINEAR IC EXPERIMENTS

1. OP AMP Applications – Adder, Subtractor, Comparators.
2. Integrator and Differentiator Circuits using IC 741.
3. Active Filter Applications – LPF, HPF (first order)
4. IC 741 Waveform Generators - Sine, Square wave and Triangular waves.
5. IC 555 Timer - Monostable and Astable Multivibrator Circuits.
6. Schmitt Trigger Circuits - Using IC 741
7. IC 565 - PLL Applications.
8. Voltage Regulator using IC 723, Three Terminal Voltage Regulators - 7805, 7809, 7912.

EQUIPMENT REQUIRED:

1. 20 MHz / 40 MHz / 60 MHz Oscilloscope.
2. 1 MHz Function Generator (Sine, Square, Triangular and TTL).
3. Regulated Power Supply.
4. Multimeter / Volt Meter.

PART - II: HDL SIMULATION PROGRAMS:

Programming can be done using any compiler. Download the programs on FPGA / CPLD boards and performance testing may be done using pattern generator / logic analyzer apart from verification by simulation using Cadence / Mentor Graphics / Synopsys / Equivalent front end CAD tools.

1. HDL code to realize all the logic gates
2. Design of 2-to-4 decoder
3. Design of 8-to-3 encoder (without and with Priority)
4. Design of 8-to-1 multiplexer and 1 x 8 demultiplexer.
5. Design of 4 bit binary to gray code converter
6. Design of 4 bit comparator
7. Design of Full adder using 3 modelling styles
8. Design of flip flops: SR, JK, T
9. Design of 4-bit binary, BCD counters (synchronous/ asynchronous reset)
10. Finite State Machine Design

**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)**

**(AJMC01) GENDER SENSITIZATION
(An Activity – based Course)**

B.Tech.-II Yr II Semester: All Branches

**L T P C
0 0 3 0**

OBJECTIVES OF THE COURSE:

- To develop students sensibility with regard to issues of gender in contemporary India.
- To provide a critical perspective on the socialization of men and women.
- To introduce students to information about some key biological aspects of genders.
- To expose the students to debates on the politics and economics of work.
- To help students reflect critically on gender violence.
- To expose students to more egalitarian interactions between men and women.

LEARNING OUTCOMES:

- Students will have developed a better understanding of important issues related to gender in contemporary India.
- Students will be sensitized to basic dimensions of the biological, sociological, psychological and legal aspects of gender. This will be achieved through discussion of materials derived from research, facts, everyday life, literature and film.
- Students will attain a finer grasp of how gender discrimination works in our society and how to counter it.
- Students will acquire insight into the gendered division of labor and its relation to politics and economics.
- Men and women students and professionals will be better equipped to work and live together as equals.
- Students will develop a sense of appreciation of women in all walks of life.
- Through providing accounts of studies and movements as well as the new laws that provide protection and relief to women, the textbook will empower students to understand and respond to gender violence.

UNIT – I

UNDERSTANDING GENDER:

Gender: Why should we study it? (Towards a world of Equals: Unit – 1)

Socialization: Making women, making men (Towards a World of Equals: Unit – 2)

Introduction. Preparing for Womanhood. Growing up Male. First lessons in Caste. Different Masculinities.

Just Relationships: Being Together and Equals (Towards a World of Equals: Unit – 12)

Mary Kom and Onler. Love and Acid just do not Mix. Love Letters. Mothers and Fathers. Further Reading: Rosa Parks – The Brave Heart.

UNIT – II

GENDER AND BIOLOGY:

Missing Women: Sex Selection and its Consequences (Towards a World of Equals: Unit – 4)

Declining Sex Ratio. Demographic Consequences.

Gender Spectrum: Beyond the Binary (Towards a World of Equals: Unit – 10)

Two or Many? Struggles with Discrimination.

Additional Reading: **Our Bodies, Our Health (Towards a World of Equals: Unit – 13)**

UNIT – III

GENDER AND LABOUR:

Housework: the Invisible Labor (Towards a World of Equals: Unit – 3)

“My Mother doesn’t Work”. *Share the Load*.

Women’s Work: Its Politics and Economics (Towards a World of Equals: Unit – 7)

Fact and Fiction. Unrecognized and Unaccounted work.

Further Reading: Wages and Conditions of Work

UNIT – IV

ISSUES OF VIOLENCE:

Sexual Harassment: Say No! (Towards a World of Equals: Unit – 6)

Sexual Harassment, not Eve – teasing – Coping with Everyday Harassment – Further

Reading: “Chupulu” **Domestic Violence: Speaking Out (Towards a World of Equals:**

Unit – 8)

Is Home a Safe Place? – When Women Unite [Film]. Rebuilding Lives. Further Reading.

New Forums for justice.

Thinking about Sexual Violence (Towards a World of Equals: Unit – 11)

Blaming the Victim – “! Fought for my Life” – Further Reading. The Caste Face of Violence.

UNIT – V

GENDERS STUDIES:

Knowledge: Through the Lens of Gender (Towards a World of Equals: Unit – 5)

Point of View. Gender and the Structure of Knowledge. Further Reading. Unacknowledged

Women Artists of Telangana

Whose History? Questions for Historians and Others (Towards a World of Equals: Unit – 9)

Reclaiming a Past. Writing other Histories. Further Reading. Missing Pages from Telangana History.

ESSENTIAL READING: All the Units in the Text books, “Towards a World of Equals: A Bilingual Textbook on Gender” Written by A. Suneetha, Uma Bhrugubanda, Duggirala Vasanta, Rama Melkote, Vasudha Nagaraj, Asma Rasheed, Gogu Shyamala, Deepa Sreenivas and Susie Tharu.

Note: Since it is Interdisciplinary Course, resource Persons can be drawn from the fields of English Literature of Sociology or Political Science or any other qualified faculty who has expertise in this field.

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3. Abdulali Sohaila. “ I Fought For My Life...and Won.” Available online at: <http://www.thealternative.in/lifestyle/i-fought-for-my-lifeand-won-sohaila-abdulal/>

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9. Tripti Lahiri. "By the Numbers: Where India Women Work." Women`s Studies Journal (14 November 2012) Available online at: <http://blogs.wsj.com/India/real-time/2012/11/14/by-the-numbers-where-Indian-women-works/>
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11. Vimala "Vantilu (The Kitchen)". Omen Writing in India: 600BC to the Present, Volume II The 20th Century. Ed. Susie Tharu and K. Lalita. Delhi: Oxford University Press, 1995. 599-601.
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14. Menon, Nivedita. Seeing Like a Feminist. New Delhi. Zubaan-Penguin Books, 2012.
15. Jayaprabha, A. "Chupulu (Stares)". Women Writing in India: 600BC to the Present. Volume II: The 20th Century Ed. Susie Tharu and K. Lalita. Delhi: Oxford University Press, 1995. 596-597.
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