ACADEMIC REGULATIONS
COURSE STRUCTURE
AND
DETAILED SYLLABUS

ELECTRONICS AND COMMUNICATION ENGINEERING

For

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

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)
Narsampet, Warangal (Rural) – 506 332
Telangana State, India

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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:

2. Pursued a course of study for not less than four academic years and not more than eight academic years.
3. 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.

1. **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	-	-	-	03
Comprehensive Viva Voce	-	-	-	03
Seminar	-	-	02	03
Major Project	-	-	15	12

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.

1. Subjects / Courses to be offered:

2. 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.

3. The maximum number of students to be registered in each course shall depend upon the physical facilities available.

4. 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.

5. In any department, preference for registration shall be given to those students of that department for whom the course is a core course.

6. 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.

1. Shortage of attendance below 65% shall in no case be condoned.
2. Student falling short of attendance as specified above will be detained.

3. 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 6 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 6 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 186 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	OS (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 above).

11.8 The Semester Grade Point Average (SGPA) is calculated by dividing the Sum of Credit Points (∑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

$$\left\{\sum_{i=1}^{N} C_i G_i\right\} / \left\{\sum_{i=1}^{N} C_i\right\}$$ …. 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 is 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 6 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.

$$\left\{\sum_{j=1}^{M} C_j G_j\right\} / \left\{\sum_{j=1}^{M} C_j\right\}$$ ….for all 'S' semesters registered (i.e., upto and inclusive of 'S' semester, S≥2)

Where "*M*" is the total no. of Subjects (as specifically required and listed under the Course Structure of the parent Department) the student has 'REGISTERED' from the 1^{st} 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 ***Gi*** 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.11.6-11.10**,** 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≥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≥4.5; subject to the condition that he secures a GP≥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.

1. 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.11.6 – 11.10.

13.2 For Final % of Marks equivalent to the computed final CGPA, the following formula may be used:

% of Marks = (Final CGPA – 0.5) X 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:

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.

iii. Secures Cumulative Grade Point Average (CGPA) ≥4.5.

iv. 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 per **item 13.2** 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.

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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 of 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.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(AUTONOMOUS)

ELECTRONICS & COMMUNICATION ENGINEERING

COURSE STRUCTURE

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

I YEAR **I SEMESTER**

S.No.	Subject code	Subject	L	T	P	Credits
1	AJ1001	Mathematics- I	4	1	0	4
2	AJ1501	Problem Solving and Computer Programming	4	1	0	4
3	AJ1013	English	3	0	0	3
4	AJ1012	Environmental Studies	3	0	0	2
5	AJ1008	Engineering Physics	4	1	0	4
6	AJ1502	Problem Solving and Computer Programming Lab	0	0	3	2
7	AJ1009	Engineering Physics Lab	0	0	3	2
8	AJ1014	English Language Communication Skills Lab	0	0	3	2
		Total Credits	**18**	**3**	**9**	**23**

I YEAR **II SEMESTER**

S.No.	Subject code	Subject	L	T	P	Credits
1	AJ2002	Mathematics – II	3	1	0	4
2	AJ2202	Electrical Circuits	4	1	0	4
3	AJ2401	Basic Electronics Engineering	4	0	0	4
4	AJ2010	Engineering Chemistry	3	0	0	3
5	AJ2303	Engineering Graphics	2	0	4	4
6	AJ2004	Numerical Methods	3	0	0	2
7	AJ2402	Basic Electronics Lab	0	0	3	2
8	AJ2307	Engineering Workshop & IT Work Shop	0	0	3	2
		Total Credits	**19**	**2**	**10**	**25**

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COURSE STRUCTURE
(Applicable from the batch admitted during 2015-16 and onwards)

II YEAR **I SEMESTER**

S.No.	Subject code	Subject	L	T	P	Credits
1	AJ3003	Mathematics - III	4	1	0	4
2	AJ3212	Electrical Technology	3	0	0	3
3	AJ3404	Switching Theory and Logic Design	3	0	0	3
4	AJ3405	Signals and Systems	4	1	0	4
5	AJ3406	Electronic circuit Analysis	4	0	0	4
6	AJ3407	Electronic Circuit Analysis Lab	0	0	3	2
7	AJ3408	Basic Simulation Lab	0	0	3	2
8	AJ3213	Electrical Technology Lab	0	0	3	2
		Total Credits	**18**	**2**	**9**	**24**

II YEAR **II SEMESTER**

S.No.	Subject code	Subject	L	T	P	Credits
1	AJ4409	Probability Theory and Stochastic Process	3	1	0	3
2	AJ4508	OOP & Data Structures	3	1	0	3
3	AJ4410	Pulse and Digital Circuits	4	1	0	4
4	AJ4411	Analog Communications	4	0	0	4
5	AJ4412	Electromagnetic Waves and Transmission Lines	4	0	0	4
6	AJ4413	Pulse and Digital Circuits Lab	0	0	3	2
7	AJ4509	OOP & Data Structures Lab	0	0	3	2
8	AJ4414	Analog Communication Lab	0	0	3	2
		Total Credits	**18**	**3**	**9**	**24**
9	AJMC01	Gender Sensitization	0	0	3	2*

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)
ELECTRONICS & COMMUNICATION ENGINEERING
COURSE STRUCTURE
(Applicable from the batch admitted during 2015-16 and onwards)

III YEAR **I SEMESTER**

S.No.	Subject code	Subject	L	T	P	Credits
1	AJ5415	Digital Communications	3	1	0	4
2	AJ5446	Digital Design through HDL	3	0	0	3
3	AJ5214	Control Systems	3	1	0	3
4	AJ5417	IC Applications	4	0	0	4
5	AJ5E02 AJ5511 AJ5129	**Open Elective –I** 1.Managerial Economics and Financial Accountancy. 2.Data Base Management System 3. Disaster Management	3	0	0	3
6	AJ5418 AJ5419 AJ5420	**Professional Elective – I** 1.Electronic Measurements & Instrumentation 2.Data Acquisition System 3.Digital Television Engineering	3	0	0	3
7	AJ5421	IC & HDL Simulation Lab	0	0	3	2
8	AJ5422	Digital Communications Lab	0	0	3	2
		Total Credits	**20**	**2**	**6**	**24**
9	AJMC02	Value Education, Human Right and Legislative Procedures	3	0	0	2*

III YEAR **II SEMESTER**

S.No.	Subject code	Subject	L	T	P	Credits
1	AJ6423	Microprocessors and Microcontrollers	4	1	0	4
2	AJ6424	Digital Signal Processing	4	1	0	4
3	AJ6425	Antennas and Wave Propagation	4	0	0	4
4	AJ6 AJ6240 AJ6E11	**Open Elective – II** 1.Project Planning and Management 2.Fuzzy Logic and Neural Networks 3. Entrepreneurship	3	0	0	3
5	AJ6426 AJ6427 AJ6428	**Professional Elective – II** 1.VLSI Technology 2. Telecommunication Switching Networks 3. Data Communication and Networking	3	0	0	3
6	AJ6429	Digital Signal Processing Lab	0	0	3	2
7	AJ6430	Microprocessors and Microcontrollers Lab	0	0	3	2
8	AJ6015	Advanced Communication Skills Lab	0	0	3	2
		Total Credits	**18**	**2**	**9**	**24**
9	AJMC02	Energy Studies	0	0	3	2*

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)
ELECTRONICS & COMMUNICATION ENGINEERING
COURSE STRUCTURE
(Applicable from the batch admitted during 2015-16 and onwards)

IV YEAR **I SEMESTER**

S.No.	Subject code	Subject	L	T	P	Credits
1	AJ7431	Embedded Systems	4	0	0	4
2	AJ7432	Microwave and Optical Communication Engineering	4	0	0	4
3	AJ7433 AJ7517 AJ7434	**Professional Elective – III** 1.Digital Image Processing 2.Operating Systems 3.Low Power VLSI Design	3	0	0	3
4	AJ7530 AJ7553	**Open Elective – III** 1.Engineering System Modeling and Simulation 2. Cloud Computing and IOT 3. Big Data Management	3	0	0	3
5	AJ7435 AJ7436 AJ7437	**Professional Elective – IV** 1.Wireless Communication Networks 2.Satellite Communication 3. Real Time Operating systems	3	0	0	3
6	AJ7438	Embedded Systems Lab	0	0	3	2
7	AJ7439	Microwave and Optical communication Lab	0	0	3	2
8	AJ7471	Industrial Oriented Miniproject	0	0	3	3
		Total Credits	**17**	**0**	**9**	**24**

IV YEAR **II SEMESTER**

S.No.	Subject code	Subject	L	T	P	Credits
1	AJ8440 AJ8441 AJ8442	**Professional Elective –V** 1.Wireless Sensor Networks 2. Digital Signal Processors and Architectures 3.RF Circuit Design	3	0	0	3
2	AJ8443 AJ8444 AJ8445	**Professional Elective –VI** 1.Radar Systems and Navigational Aids 2.Mixed Signal Design 3. Multimedia and Signal coding	3	0	0	3
3	AJ8482	Technical Seminar	0	6	0	3
4	AJ8483	Comprehensive Viva-Voce	0	0	0	3
5	AJ8484	Major Project	0	0	15	12
		Total Credits	**6**	**6**	**15**	**24**

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES (AUTONOMOUS)

(AJ1001) MATHEMATICS-I

B.Tech.- 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:

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

TEXT BOOKS:

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

REFERENCE BOOKS:

18. Erwyn Kreyszig : Advanced Engineering Mathematics, John Wiley and Sons, 8th Edition.
19. 2. T. K. V. Iyengar: Engineering Mathematics-I, S. Chand and Company.
20. A textbook of Engineering Mathematics Vol-I by P.B.Bhaskara Rao, S.K.V.S. Rama chary.
21. A textbook of Engineering Mathematics Vol-I by C. Shankaraiah, VGS Book Link.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES (AUTONOMOUS)

(AJ1501) PROBLEM SOLVING AND COMPUTER PROGRAMMING

B.Tech.,-I Yr I Sem: CSE & ECE **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-I:

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-II:

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-III:

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-IV:

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

UNIT-V:

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:

6. 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)
7. 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.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(AUTONOMOUS)

(AJ1013) ENGLISH

B.Tech.-I Yr 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).

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC- AUTONOMOUS)

(AJ1012) ENVIRONMENTAL STUDIES

B.Tech.- I Yr I Sem: ECE **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: habital 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, 4^{th} 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.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(AUTONOMOUS) (AJ1008)

ENGINEERING PHYSICS

B.Tech., I Year I Sem: ECE, CSE & EEE **L T PC**
4 1 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.

RECOMMENDED 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. Murugeshan & 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

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(AUTONOMOUS)

(AJ1502) PROBLEM SOLVING AND COMPUTER PROGRAMMING LAB

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

8. 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 fie 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
    iv. Display all records
    iv. Quit

16. Write a C Program that removes all comment lines from a C source file.

TEXT BOOK:

1. *Programming in C*, Pradip Dey & Manas Ghosh, 2nd Ed., 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 Ritchie,Second dition,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.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(AUTONOMOUS)

(AJ1009) ENGINEERING PHYSICS LAB

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

L	T	P	C
0	0	3	2

OBJECTIVES:

This course *on Engineering* Physics lab designed with 10 experiments in an academic year The objective of 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 like physical optics, lasers, fiber optics, electricity and basic electronics and also the students is exposed to various tools like screw gauge, vernier callipers, physical balance, spectrometer and microscope.

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 given wire using Torsional pendulum
5. R-C circuit analysis
6. Determination of Numerical aperture of given optical fiber
7. Determination of wavelength of sodium vapour lamp by using diffraction grating
8. Determination of the dispersive power of given prism by finding minimum deviation
9. Determination of the radius of curvature of given Plano convexlens by forming Newton‟s rings
10. L-C-R circuit analysis

Laboratory Manual:

The Laboratory manual of Engineering Physics by Dr. Y. Aparna & Dr. K. Venkateshwar Rao, VGS Publications.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(AUTONOMOUS)

(AJ1014) ENGLISH LANGUAGE COMMUNICATION SKILLS LAB

B.Tech., I Year I Sem: EEE, ECE, CIVIL & MECH **L T P C**
0 0 3 2

The **Language Lab** focuses on the production and practice of sounds of language and familiarizes 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.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(AUTONOMOUS)
(AJ2002) MATHEMATICS – II

I Yr. II Sem: Common to all branches **L T P C**
4 0 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-Hamillton 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-rang 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. Rama chary
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 Serie**s)**

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JAYMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(AUTONOMOUS)

(AJ2202) ELECTRICAL CIRCUITS

B.Tech I Year II Sem: ECE **L T P C**
4 1 0 4

Objectives:

1. Designs of this subject to students to have a firm grasp the basics of electrical circuits.
2. Emphasis on the basic theorems & network reduction tech of analysis which helps to develop the ability to design practical circuits used for real time applications.
3. A comprehensive coverage topic on single-phase & three-phase AC circuits provides a quick understanding of the concepts underlying the electrical machines analysis.
4. Understanding the behavior of networks containing R, L, & C elements, when they suddenly switched on to a source is very important in several practical conditions, & this behavior of the network is covered in transient analysis.
5. Detail average of topics relative to filters & attenuators emphasis the students to have best knowledge in electronics circuits.
6. Study of 2-phase networks in details, helps the students to analysis the problems in electronic circuits & singles.

UNIT-I:
INTRODUCTION TO ELECTRICAL CIRCUITS:
Basic definitions, types of elements, types of sources, circuit components, ohm‟s law, Kirchhoff‟s laws, inductive networks, capacitive networks, and Network reduction techniques- series, parallel resistive networks and star to delta and delta to star transformation, Source transformation Mesh and Nodal analysis and Simple problems.
Network theorems: Superposition, Reciprocity, Thevenin‟s, Norton‟s, Maximum power transfer theorems and simple problems.

UNIT-II:
ALTERNATING QUANTITIES:
Principle of ac voltage waveforms and basic definition, root mean square and average value of alternating current and voltage, form factor and peak factor, Concept of reactance, Impedance, susceptance and admittance, Phase and phase difference pharos algebra of ac circuits, J-operator, singe phase series and parallel circuits, power in ac circuits, series and parallel Resonance, concept of Band width and Q-factor and Illustrative Problems.
Three Phase AC Circuits: Production of 3 -ϕ Voltages, Voltage& Current relationships of Line and Phase values for Star and Delta connections and Illustrative Problems.

UNIT III
TWO-PORT NETWORKS:
Z, Y, ABCD, h and g parameters, Conversion from one parameter to other parameters & their relations, Series, Parallel and Cascaded Networks ,Characteristic impedance, Image Parameters and Illustrative Problems

UNIT-IV
STEADY STATE AND TRANSIENT ANALYSIS:
Steady state and transient analysis of series RL, RC & RLC Circuits, and parallel RL, RC & RLC Circuits for DC and AC excitation and Illustrative Problems

UNIT-V

NETWORK TOPOLOGY:

Definition of Graph, Tree, Basic cut set and Basic Tie set Matrices for planer networks, Loop and Nodal methods for analysis of Networks with dependent & Independent voltage and current sources ,duality & Dual networks

TEXT BOOKS:

1. Engineering circuit analysis by Willian Hayt and Jack E.Kemmerlly McGraw Hill Company.
2. Circuits & Networks by A.Sudhakar and Shyammohan S .Palli, Tata Mc.Graw Hill
3. Electric circuits by A. Chakrabarthy, Dhanipat Rai &Sons.

REFERENCES:

1. Network analysis by ME Van Valkenberg.
2. Engineering circuits analysis by C.L.Wadhwa, New Age International.
3. Electrical circuits by David A.Bell, Oxford University Press
4. Electric circuits theory by K.Rajeswaran, Pearson Education 2004.
5. Electrical Circuit Analysis by Roy Chowdhary

COURSE OUTCOMES:

1. Exhaustive coverage of basic network reduction techniques and Theorems helps the students in easy reduction of Electrical circuits
2. Students gains balanced knowledge on Ac and Dc circuit analysis which helps in the analysis of Electrical machines and converter circuits
3. Coverage of Two-Port networks will helps the students to analyze the complex electronic circuits
4. Design of Filters & Attenuators will helps the students in practical design electrical & electronic circuits

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JAYMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(AJ2401) BASIC ELECTRONICS ENGINEERING

I Year II Sem: ECE&EEE **L T P C**
4 0 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 Thermisters, 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.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(AUTONOMOUS)

(AJ2010) ENGINEERING CHEMISTRY

B.Tech., I Year II Sem: ECE & CSE **L T P C**
3 0 0 3

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- 1:
ELECTRO CHEMISTRY
Ohm‟s law, conductance, specific, equivalent and molar conductance, units and their relation.
Numerical Problems. EMF: Electrochemical and Electrolytic cells, Galvanic cell, Electro chemical series, measurement of EMF and single electrode potential, Nernst‟s equation and its applications,

UNIT- 2:
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–3:
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-4:
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 – 5:
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 conversation 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.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(AUTONOMOUS)
(AJ2303) ENGINEERING GRAPHICS

B.Tech., I Year II Sem: ECE **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 PLANES**: Ortho Graphic Projections of Regular Planes-Surface inclined to both the principal planes.

UNIT-III:
PROJECTIONS OF RIGHT REGUALR 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

REFRENCE BOOKS:

1. Engineering Drawing: - Besant, Agrawal, TMH.
2. Engineering Drawing by K. Venu Gopal & V. Prad Raja New Age Publications.
3. Engineering Graphics. PI 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.
4. Perform sections of solids, development of surfaces and their applications in human life.

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JAYMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(AUTONOMOUS)
(AJ2004) NUMERICAL METHODS

I Yr. II Sem: EEE & ECE **L T P C**
3 0 0 2

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 $1/3^{rd}$ rule, Simpson‟s $3/8^{th}$ 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 Trapezodial 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.

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 BOOKS:

1. Erwyn Kreyszig : Advanced Engineering Mathematics, John Wiley and Sons, 8th Edition.
2. 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

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JAYMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(Autonomous)

(AJ2402) BASIC ELECTRONICS LAB

I Year II Sem B.Tech: 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(0-200µA, 0-20mA)
6. Voltmeters (0-20V)
7. Electronic Components -Resistors, Capacitors, BJTs.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(AUTONOMOUS)

(AJ2307) ENGINEERING WORKSHOP & IT WORKSHOP

B.Tech. I Year II SEM: ME, CE& ECE

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.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC AUTONOMOUS)

(AJ3003) MATHEMATICS – III

B.Tech II Year I Sem : ECE & EEE **L T P C**
4 1 0 4

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) Improper real integrals $\int_{-\infty}^{\infty} f(x)dx$ (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, logz, 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.

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-transformsstudents 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.

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JAYMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(AUTONOMOUS)
(AJ3212) ELECTRICAL TECHNOLOGY

II Year B. Tech. ECE I- Semester

L	T	P	C
3	0	0	3

OBJECTIVES

- This course introduces the basic concepts and design analysis of the filters and attenuators, the Locus diagrams and Magnetic Circuits, and their use in the circuit theory.
- The emphasis of this course is laid on the basic operation of Transformers, DC machines which includes DC generators and DC motors, A.C Machines And Synchronous machines.

UNIT - I:

FILTERS AND SYMMETRICAL ATTENUATORS:

Introduction to filters**,** Classification of Filters, Filter Networks, Characteristic Impedance, Classification of Pass Band and Stop Band, Characteristic Impedance in the Pass and Stop bands, Constant-k Low Pass and High Pass Filters-derived T-section and π-section, Band Pass Filter and Band Elimination Filter, Illustrative problems.

Symmetrical Attenuators: T-Type Attenuator, π-Type Attenuator, Bridged T-Type Attenuator, Lattice Attenuator.

UNIT - II:

LOCUS DIAGRAMS AND MAGNETIC CIRCUITS:

Locus diagrams – Series and Parallel RL, RC, RLC circuits with variation of various parameters

Magnetic Circuits: Basic definitions, analogy between electric and magnetic circuits Magnetization characteristics of Ferro magnetic materials, self induction and mutual inductance, energy in linear magnetic systems, coils connected in series, attracting force of electromagnets.

UNIT-III:

TRANSFORMERS:

Principle of operation, Constructional details, ideal Transformer and practical Transformer, Losses, Transformer Tests, Efficiency and Regulation calculations (simple problems)

UNIT - IV:

DC MACHINES:

Principle of operation and operation of DC Generator, EMF equation, Types, Losses and Efficiency, Magnetization and Load Characteristics of DC Generators. DC Motors-Principle of operation, Types, Characteristics, Losses and Efficiency, Swinburne‟s Test, Speed control of DC Shunt Motor-Flux and Armature voltage control methods.

UNIT - V:

A.C MACHINES:

Three phase induction motor, principle of operation, slip and frequency, torque (simple problems).

Synchronous machines: Principles of operation, EMF equation (Simple problems on EMF). Synchronous motor principle and operation (Elementary treatment only)

TEXT BOOKS:

1. A Text book of Electrical Technology by B.L Theraja and A.K Theraja, S.Chand publications
2. Electrical Circuits - A. Chakrabarhty, Dhanipat Rai & Sons.
3. Network Analysis - N.C Jagan and C. Lakhminarayana, BS publications.
4. Basic Concepts of Electrical Engineering - PS Subramanyam, BS Publications.

REFERENCE BOOKS:

1. Engineering Circuits Analysis - William Hayt and Jack E. Kemmerly, Mc Graw Hill Company, 7th Edition.
2. Basic Electrical Engineering - S.N. Singh PUI.
3. Electrical Circuits - David A. Bell, Oxford Printing Press.
4. Principles of Electrical Engineering by V.K Mehta, Rohit Mehta, S.Chand publications.
5. Electrical Circuit Analysis - K.S. Suresh Kumar, Pearson Education.

OUTCOMES:

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

- Filters and attenuators
- The operation of Transformers, DC machines and AC Machines

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

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC- AUTONOMOUS)

(AJ3404) Switching Theory and Logic Design

B.Tech II Year I Sem : ECE & CSE

L	T	P	C
3	0	0	3

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 BOOKS:

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

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC AUTONOMOUS)

(AJ3405) SIGNAL AND SYSTEMS

B.Tech II Year I Sem: ECE

L T P C
4 1 0 4

PREREQUISITE:

Inclination to learn mathematics, basic knowledge of differential equations and difference equations, electrical circuits and networks

OBJECTIVE:

The course will provide strong foundation on signals Properties and Analysis which will be useful for creating foundation of communication and signal processing. The students will learn basic continuous time and discrete time signals and systems. Student will understand application of various transforms for analysis of signals and systems both continuous time and discrete time. Students will also explores power and energy signals and spectrum.

UNIT I :SIGNAL ANALYSIS

Analogy between vector and signals, Orthogonal signal space, signals approximation using orthogonal function, Mean square Error, Closed or Complete set of orthogonal functions, Orthogonality Complex function, Continuous-Time (CT) and Discrete-Time (DT),Classifications of signals, Exponential and sinusoidal signals, Properties of Signals:Addition,Multiplication,time shifting ,Amplitude scaling,Folding, Concepts of Impulse function, Unit Step function,Signum function, CT & DT Systems Basic Systems Properties.

UNIT II:
FOURIER SERIES AND FOURIER TRANSFORMS

Fourier Series:

Representation of Fourier series, Continuous time periodic signals, Properties of Fourier series, Dirchlet's conditions, Trigonometric Fourier series and Exponential Fourier series,Complex Fourier Spectrum.

Fourier Transforms:

Deriving Fourier Transform from Fourier series, Fourier Transform of arbitrary signal, Fourier Transform of Standard signal, Fourier Transform of Periodic signal, properties of Fourier Transform, Fourier transform involving impulse function and Signum function

UNIT III:
SAMPLING AND LAPLACE TRANSFORMS

Sampling: Sampling theorem-Graphical and analytical proof Band Limited Signals, Types of Sampling – Impulse Sampling ,Natural and Flat Top Sampling, Reconstruction of signal from its samples, Effect of under sampling-Aliasing.

Laplace Transforms: Laplace Transforms & Inverse Laplace Transform, Concept of Region of Convergence (ROC) for Laplace Transforms, Relation between Laplace Transform and Fourier transform of a signal, Applications of Laplace Transform to various signal.

UNIT IV:
SIGNAL TRANSMISSION THROUGH LINEAR SYSTEMS:

Linear Systems, Impulse Response, Response of a Linear Systems, Linear Time Invariant(LTI) System, properties of LTI systems , Linear Time Variant(LTV) Systems, Transfer function of a LTI Systems, Filter characteristics of Linear Systems ,Distortion less transmission through a system, Signal bandwidth, System bandwidth , Ideal LPF,HPF and

BPF characteristics, Causality and paley-wiener criterion for physical realization, Basics of FIR and IIR systems, Structures for FIR and IIR filters.

UNIT V:

CONVOLUTION AND CORRELATION OF SIGNALS: Concept of convolution in Time domain and Frequency domain, Graphical representation of Convolution, Convolution property of Fourier Transform, Correlation and Auto Correlation of function Properties of Correlation function, Energy density spectrum, Parsevals‟s Theorem, Power density spectrum, Relation between Auto correlation function and Energy/power spectral density function, Relation between Convolution and Correlation ,Detection of periodic signals in the presence of Noise by Correlation ,Extraction of signal from noise by filtering.

TEXT BOOKS:

1. Signals, Systems & Communications - B.P. Lathi, 2013, BSP.
2. Signals and Systems - A.V. Oppenheim, A.S. Willsky and S.H. Nawab, 2 Ed., PHI.

REFERENCE BOOKS:

1. Signals & Systems - Simon Haykin and Van Veen, Wiley, 2 Ed.
2. Signals and Signals – Iyer and K. Satya Prasad, Cengage Learning
3. Signals and Systems – A.Rama Krishna Rao – 2008, TMH.
4. Introduction to Signal and System Analysis – K.Gopalan 2009, Cengage Learning.
5. Signals and Systems-A Anand Kumar-2012 PHI.

COURSE OUTCOMES:

After learning the course the students should be able to:

- Understand about various types of signals, classify them, analyze them, and perform various operations on them.
- Understand about various types of systems, classify them, analyze them and understand their response behavior.
- Appreciate use of transforms in analysis of signals and system.
- Carry simulation on signals and systems for observing effects of applying various properties and operations.
- Create strong foundation of communication and signal processing to be studied in the subsequent semester

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(AUTONOMOUS)

(AJ3406) ELECTRONIC CIRCUIT ANALYSIS

II B.TECH I SEM: ECE **L T P C**

4 0 0 4

COURSE OBJECTIVE:

- To familiarize the student with the analysis and design of basic transistor amplifier circuits and their frequency response characteristics, feedback amplifiers, oscillators, large signal amplifiers and tuned amplifies.

UNIT I:

SINGLE STAGE AMPLIFIERS & MULTI STAGE AMPLIFIERS

Single stage amplifiers: Classification of Amplifiers, Analysis of transistor amplifier using exact hybrid model & simplified hybrid Model, Miller's Theorem, Design of Single Stage CE Amplifier.

Multi stage amplifiers: Analysis of Cascaded RC Coupled BJT amplifiers, Cascode Amplifier, Darlington Pair, different Coupling Schemes used in Amplifiers - RC Coupled, Transformed Coupled & Direct Coupled Amplifiers.

UNIT II:

BJT AMPLIFIERS - FREQUENCY RESPONSE

General frequency considerations, Frequency response of BJT Amplifier, Analysis at Low and High frequencies, Effect of coupling & Bypass capacitors. The Hybrid π- CE Transistor Model, CE Short circuits current Gain, Current Gain with Resistive Load, Gain - Bandwidth Product.

UNIT III:

FET AMPLIFIERS AND OSCILLATORS

FET Amplifiers: Analysis of CG, CS And CD Amplifiers.

Oscillators: Classification of Oscillator, Conditions for Oscillations, Generalized analysis of LC oscillations - Hartley and colpitt‟s Oscillators, RC phase shift Oscillator, Wien - Bridge & Crystal Oscillators.

UNIT IV:

FEEDBACK AMPLIFIERS: Concept of Feedback, Classification of Feedback Amplifiers, Effect of Negative Feedback on Amplifier Characteristics, Voltage Series, Voltage Shunt, Current Series and Current Shunt Feedback Configurations.

UNIT V:

LARGE SIGNAL AMPLIFIERS: Classification, Class A Direct coupled & Transformer Coupled Power Amplifier, Class - B Push - Pull Amplifier & Complementary Symmetry power Amplifiers, and their Efficiencies, Distortion in Power Amplifier.

TUNED AMPLIFIERS: Introduction, Q - Factor, Small Signal single Tuned & Double Tuned Amplifiers, Effect of Cascading Single & Double Tuned Amplifiers on Bandwidth, Stagger Tuned Amplifiers.

TEXT BOOKS :

1. Integrated Electronics – J. Millman and C. C. Halkias, 1991 Ed., 2008, TMH.
2. Electronic Devices and Circuits - S. Salivahan, N.Suresh Kumar, A Vallavaraj, 2 Ed., 2009, TMH.

REFERENCE BOOKS :

1. Electronic Devices and Circuits Theory – Robert L. Boylestad and Louis Nashelsky, 9 Ed., 2008 PE.
2. Electronic Circuit Analysis and Design – Donald A. Neaman, Mc Graw Hill.
3. Electronic Circuit Analysis – K. Lal Kishore, BS Publications, 2004.

COURSE OUTCOMES:

Upon completion of the subject, student will be able to:

1. Design and Analyse the DC bias circuitry of BJT and FET.
2. Analysis the different types of amplifiers, operation and its characteristics
3. Design circuits like amplifiers, oscillators using the transistor diodes and oscillators.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC- AUTONOMOUS)

II Year B.Tech ECE I Sem

L	T	P	C
0	0	3	2

(AJ3407) ELECTRONIC CIRCUIT ANALYSIS LAB

List of experiments

Minimum eight experiments to be conducted:

I) Design and simulation in simulation Laboratory using any simulation software

(Minimum six Experiments)
1. Single stage Common Emitter Amplifier
2. Two stage RC Coupled Amplifier
3. Common source amplifier
4. Cascode amplifier
5. RC phase shift oscillator using transistors
6. Wien bridge oscillator using transistors
7. Class A Power amplifier
8. Class B complementary symmetry Amplifier
9. Voltage series feedback amplifier
10. Class C tuned amplifier

II) Testing in the Hardware Laboratory (Minimum two Experiments)

1. Hartley & Colpitt‟s oscillators
2. RC coupled amplifier
3. Darlington pair
4. MOS common source amplifier
5. Class A power amplifier

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC- AUTONOMOUS)

(AJ3408) BASIC SIMULATION LAB

L	T	P	C
0	0	3	2

Note:
All the experiments are to be simulated using MATLAB or equivalent software Minimum of 15 experiment are to be completed.

List of Experiments:

1. Basic Operations on Matrices.
2. Generation of Various Signals and Sequences (Periodic and Aperiodic), such as Unit Impulse, unit Step, Square, Saw tooth, Triangular, Sinusoidal, Ramp, Sinc.
3. Operations on Signals and Sequences such as Addition, Multiplication, Scaling, Shifting, Folding, Computation of Energy and Average Power.
4. Finding the Even and Odd parts of Signal/Sequence and Real and Imaginary parts of Signal.
5. Convolution between Signals and sequences.
6. Auto Correlation and Cross Correlation between Signals and Sequences.
7. Verification of Linearity and Time Invariance Properties of a given Continuous/Discrete System.
8. Computation of Unit sample, Unit step and Sinusoidal responses of the given LTI system and verifying its physical realiazability and stability properties.
9. Gibbs Phenomenon.
10. Finding the Fourier Transform of a given signal and plotting its magnitude and phase Spectrum.
11. Waveform Synthesis using Laplace Transform.
12. Locating the Zeros and Poles and plotting the Pole-Zero maps in S-plane and Z-Plane for the given transfer function.
13. Generation of Gaussian noise (Real and Complex), Computation of its mean, M.S. Value and its Skew, Kurtosis, and PSD, Probability Distribution Function.
14. Sampling Theorem Verification.
15. Removal of noise by Autocorrelation / Cross correlation.
16. Extraction of Periodic Signal masked by noise using Correlation.
17. Verification of Weiner-Khinchine Relations.
18. Checking a Random Process for Stationarity in Wide sense.

JAYMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(AUTONOMOUS)
(AJ3213) ELECTRICAL TECHNOLOGY LAB

II Year B. Tech. ECE I- Semester

L	T	P	C
0	0	3	2

List of Experiments:

1. Verification of Kirchhoff's Laws.
2. Verification of RMS value of complex wave.
3. Series and Parallel Resonance.
4. Verification of Superposition and Reciprocity theorems.
5. Verification of Maximum power transfer theorem.
6. Verification of Thevenin's and Norton's theorems.
7. Magnetization characteristics of DC Shunt Generator.
8. Speed Control of a DC Shunt Motor.
9. Swinburne's test on DC Shunt Machine.
10. Brake test on DC shunt motor.
11. OC & SC test on single phase Transformer.
12. Load Test on single phase Transformer.
13. Brake Test on 3- phase Induction Motor.

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

II Year B.Tech. ECE-II Sem

(AJ4409) PROBABILITY THEORY AND STOCHASTIC PROCESSES

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

OBJECTIVES:
The primary objective of this course is:

- To provide mathematical background and sufficient experience so that the student can read, write, and understand sentences in the language of probability theory, as well as solve probabilistic problems in signal processing and Communication Engineering.
- To introduce students to the basic methodology of "probabilistic thinking" and to apply it to problems;
- To understand basic concepts of probability theory and random variables, how to deal with multiple random variables, Conditional probability and conditional expectation, joint distribution and independence, mean square estimation.
- To understand the difference between time averages and statistical averages Analysis of random process and application to the signal processing in the communication system.
- To teach students how to apply sums and integrals to compute probabilities, means, and expectations.

UNIT-I:
PROBABILITY AND RANDOM VARIABLE
Probability: Probability introduced through Sets and Relative Frequency, Experiments and Sample Spaces, Discrete and Continuous Sample Spaces, Events, Probability Definitions and Axioms, Mathematical Model of Experiments, Probability as a Relative Frequency, Joint Probability, Conditional Probability, Total Probability, Bayes‟ Theorem, Independent Events.
Random Variable: Definition of a Random Variable, Conditions for a Function to be a Random Variable, Discrete, Continuous and Mixed Random Variables

UNIT -II:
DISTRIBUTION & DENSITY FUNCTIONS AND OPERATION ON ONE RANDOM VARIABLE – EXPECTATIONS
Distribution & Density Functions: Distribution and Density functions and their Properties - Binomial, Poisson, Uniform, Gaussian, Exponential, Rayleigh and Conditional Distribution, Methods of defining Conditional Event, Conditional Density, Properties.
Operation on One Random Variable – Expectations: Introduction, Expected Value of a Random Variable, Function of a Random Variable, Moments about the Origin, Central Moments, Variance and Skew, Chebychev‟s Inequality, Characteristic Function, Moment Generating Function, Transformations of a Random Variable: Monotonic Transformations for a Continuous Random Variable, Non-monotonic Transformations of Continuous Random Variable, Transformation of a Discrete Random Variable.

UNIT-III:
MULTIPLE RANDOM VARIABLES AND OPERATIONS
Multiple Random Variables: Vector Random Variables, Joint Distribution Function, Properties of Joint Distribution, Marginal Distribution Functions, Conditional Distribution and Density – Point Conditioning, Conditional Distribution and Density – Interval conditioning, Statistical Independence, Sum of Two Random Variables, Sum of Several Random Variables, Central Limit Theorem (Proof not expected), Unequal Distribution, Equal Distributions.
Operations on Multiple Random Variables: Expected Value of a Function of Random Variables: Joint

Moments about the Origin, Joint Central Moments, Joint Characteristic Functions, Jointly Gaussian Random Variables: Two Random Variables case, N Random Variable case, Properties, Transformations of Multiple Random Variables, Linear Transformations of Gaussian Random Variables.

UNIT-IV:

STOCHASTIC PROCESSES – TEMPORAL CHARACTERISTICS:

The Stochastic Process Concept, Classification of Processes, Deterministic and Nondeterministic Processes, Distribution and Density Functions, Concept of Stationarity and Statistical Independence, First-Order Stationary Processes, Second-Order and Wide-Sense Stationarity, Nth Order and Strict-Sense Stationarity, Time Averages and Ergodicity, Mean-Ergodic Processes, Correlation-Ergodic Processes, Autocorrelation Function and its Properties, Cross-Correlation Function and its Properties, Covariance and its Properties, Linear System Response of Mean and Mean-squared Value, Autocorrelation Function, Cross-Correlation Functions, Gaussian Random processes, Poisson Random Process.

UNIT-V:

STOCHASTIC PROCESSES – SPECTRAL CHARACTERISTICS:

Power Spectrum: Properties, Relationship between Power Spectrum and Autocorrelation Function, Cross-Power Density Spectrum, Properties, Relationship between Cross-Power Spectrum and Cross-Correlation Function, Spectral Characteristics of System Response: Power Density Spectrum of Response, Cross-Power Spectral Density of Input and Output of a Linear **System.**

TEXT BOOKS:

1. Probability, Random Variables & Random Signal Principles - Peyton Z. Peebles, 4Ed., 2001, TMH.
2. Probability and Random Processes – Scott Miller, Donald Childers, 2 Ed, Elsevier, 2012.

REFERENCE BOOKS:

1. Probability, Random Variables and Stochastic Processes – Athanasios Papoulis and S. Unnikrishna Pillai, 4 Ed., TMH.
2. Theory of Probability and Stochastic Processes- Pradip Kumar Gosh, University Press
3. Probability and Random Processes with Application to Signal Processing – Henry Stark and John W. Woods, 3 Ed., PE
4. Probability Methods of Signal and System Analysis - George R. Cooper, Clave D. MC Gillem, 3 Ed., 1999, Oxford.
5. Statistical Theory of Communication - S.P. Eugene Xavier, 1997, New Age Publications.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC- AUTONOMOUS)

(AJ4508) OBJECT ORIENTED PROGRMMING & DATA STRUCTURES

II Year II-Sem: ECE & 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.

Syllabus Content

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..

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC AUTONOMOUS)

II Year B.Tech II Sem : ECE L T/P/C
4 1 0 4

(AJ4410) PULSE AND DIGITAL CIRCUITS

COURSE OBJECTIVE:

The main objectives are:

- To explain the complete response of R – C and R-L-C circuits.
- To explain clippers, clampers, switching characteristics of transistors and sampling gates.
- To construct various multivibrators using transistors, design of sweep circuits and sampling gates.
- To discuss realize logic gates using diodes and transistors.

UNIT-I:
LINEAR WAVE SHAPING:

Low pass and high pass RC circuits and their response for sinusoidal, step, pulse, square and ramp inputs, Differentiators and integrators circuits, Attenuators and its applications, RL and RLC circuits and their responses for step input.

UNIT-II:
NON LINEAR WAVE SHAPING:
Diode and Transistor clippers, Two level clippers, Clamping operation, Clamping circuit theorem, practical clamping circuits and taking source and diode resistances into account, comparators and its applications.

UNIT-III:
MULTIVIBRATORS:
Switching characteristics and switching times of BJT‟s and FET‟s, Analysis and design of Astable, monostable, bi stable multivibrators and Schmitt triggers using transistors.
SAMPLING GATES:
Basic operating principle of gates, Unidirectional and Bi-directional gates using diodes and transistors.

UNIT-IV:
REALIZATION OF LOGIC GATES:
AND, OR, and NOT gates using diodes and transistors, DCTL, RTL, DTL, TTL and CMOS logic families and its comparison.
SWEEP CIRCUITS:
Principles and methods of generating Time base waveforms, Miller and bootstrap.

UNIT-V:
SYNCHRONIZATION AND FREQUENCY DIVISION:
Principles of synchronization, frequency division in sweep circuit, and stability of relaxation devices, astable and monostable relaxation circuits, and synchronization of a sweep circuit with symmetrical signals, sine wave frequency division with a sweep circuit.

TEXT BOOKS:

1. Millman‟s Pulse, Digital and Switching Waveforms- J. Millman, H. Taub and Mothiki S. Prakash Rao, 2 Ed., 2008 TMH.

2. Solid State Pulse Circuits- David A. Bell, 4 Ed., 2002 PHI.

REFERENCE BOOKS:

1. Wave Generation and Shaping- L. Strauss.
2. Pulse and Digital Circuits- A. Anand Kumar, 2005 PHI.
3. Fundamentals of Pulse and Digital Circuits- Ronald J. Tocci, 3 Ed., 2008.

OUTCOMES:

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

- Understand the applications of diode as integrator, differentiator, clipper and clamper circuits.
- Learn various switching devices such as diode, transistor, SCR.
- Difference between logic gates and sampling gates.
- Design multivibrators for various applications, synchronization.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(UGC-AUTONOMOUS)

(AJ4411) ANALOG COMMUNICATIONS

II Year B.Tech. II-Sem : ECE **L T P C**
4 0 0 4

COURSE OBJECTIVES:

This course aims at:

- Developing and understanding of the design of analog communication system.
- Establishing a firm foundation for the understanding of communications systems, and the relationship among various technical factors when such systems are designed.

UNIT I:

AMPLITUDE MODULATION

Introduction to communication system, Need for modulation, Amplitude Modulation, Time domain and frequency domain description, Generation and Detection of AM waves.

Double side band suppressed carrier modulation: time domain and frequency domain description of DSB-SC, Generation and Detection of DSB-SC Waves.

UNIT II:

SSB MODULATION

Introduction to Hilbert Transform, Frequency domain and Time domain description Generation and Detection of SSB Wave.

Vestigial side band modulation: Frequency and Time domain description, Generation and Detection of VSB Modulated wave, Comparison of AM Techniques, Applications of different AM Systems.

UNIT III:

ANGLE MODULATION

Basic concepts, Frequency Modulation, Spectrum Analysis of Sinusoidal FM Wave, Narrow band FM, Wide band FM, Constant Average

Power, Transmission bandwidth of FM Wave, Generation and Detection of FM Waves Comparison of FM and AM, Frequency Division Multiplexing.

UNIT IV:

NOISE

Resistive Noise Source (Thermal), Arbitrary Noise Sources, Effective Noise Temperature, Average Noise Figures, Average Noise Figure of cascaded networks, Narrow Band noise, Quadrature representation of narrow band noise & its properties.Noise in Analog communication System, Threshold effect in Angle Modulation System, Pre-emphasis and de-emphasis.

UNIT V:

RECEIVERS

Radio Receiver - Receiver Types - Tuned radio frequency receiver, Superhetrodyne receiver, RF section and Characteristics - Frequency changing and tracking, Intermediate frequency, AGC, FM Receiver, Comparison with AM Receiver, Amplitude limiting.

PULSE MODULATION: Types of Pulse modulation, PAM (Single polarity, double polarity) PWM: Generation and demodulation of PWM, PPM, Generation and demodulation of PPM, Time Divison Multiplexing.

TEXTBOOKS:

1. Communication Systems by Simon Haykins John Wiley & Sons , 2 nd Edition.
2. Electronics & Communication System – George Kennedy and Bernard Davis , TMH 2004.

REFERENCES:

1. Analog and Digital Communication – K. Sam Shanmugam, Willey ,2005
2. Electronics Communication Systems-Fundamentals through Advanced-Wayne Tomasi, 5th Edition,2009,PHI.
3. Communication Systems – B.P.Lathi,BS Publications,2004.
4. Priciples of Communication Systems – H Taub and D.Schilling.

COURSE OUTCOMES:

Upon completion of the subject, students will be able to

- Conceptually understand the baseband signal & system.
- Identify various elements, processes, and parameters in communication systems and describe their functions, effects, and interrelationship.
- Understand basic knowledge of AM, FM transmission & reception.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC- AUTONOMOUS)

(AJ4412) ELECTROMAGNETIC WAVES & TRANSMISSION LINES

II YEAR II SEM: ECE **L T P C**

4 0 0 4

COURSE OBJECTIVES:

The course objectives are to introduce the student to the fundamental theory and concepts of electromagnetic waves and transmission lines, and their practical Applications... To study the propagation, reflection, and transmission of plane waves in bounded and unbounded media.

UNIT-I

ELECTROSTATIC FIELDS:

Coulomb‟s law, Field due to different Charge Distributions, Gauss „law in Integral and Point Form, Concept of Electric Flux Density, Potential Gradient, Conductors & Dielectrics, Concept of Polarization, Energy stored in Electrostatic field, Poisson‟s and Laplace Equations and their Applications, ; Capacitance - Parallel plate, Coaxial, Spherical Capacitors, illustrative Problems.

UNIT-II

MAGNETOSTATIC FIELDS:

Steady current, Current distributions, Biot–Savart law, Ampere‟s Circuital law in Integral and Differential form, Force on Current Elements, Magnetic Potentials, Concept of Magnetic Flux Density, Energy stored in Magnetic Field, Fields in Magnetic Materials – Concept of Magnetization, Self and Mutual Inductances.

Maxwell's Equations (Time Varying Fields): Faraday‟s Law and Transformer EMF, inconsistency of Ampere's Law and Displacement Current Density, Maxwell's Equations in Different Final Forms and Word Statements, Conditions at a Boundary surface: Dielectric-Dielectric and Dielectric- Conductor interfaces illustrative Problems.

UNIT-III

EM WAVE CHARACTERISTICS-I:

Wave Equations for Conducting and perfect Dielectric Media, Uniform Plane waves - Definition, All Relations Between E & H, Sinusoidal Variations, Wave Propagation in Lossless and Conducting Media, Conductors & Dielectrics - Characterization, Wave propagation in Good Conductors and Good Dielectrics, Polarization, lllustrative Problems.

EM Wave Characteristics-II: Reflection and Relraction of Plane Waves- Normal and Oblique incidences for both Perfect Conductor and Perfect Dielectrics, Brewster Angle, Critical Angle and Total internal Reflection, Surface impedance, , Poynting Vector and Poynting Theorem - Applications, Power Loss in a Plane Conductor., illustrative Problems.

UNIT-IV

TRANSMISSION LINES-I:

Types, Parameters, Transmission Line Equations, Primary & Secondary Constants, Expressions for Characteristic impedance, Propagation Constant, Phase and Group Velocities, infinite Line Concepts, Losslessness/Low Loss Characterization, Distortion - Condition for Distortionlessness and Minimum Attenuation, Loading - Types of Loading, Illustrative Problems.

UNIT-V

TRANSMISSION LINES-II:

Input impedance Relations, SC and OC Lines, Reflection Coefficient, VSWR. UHF Lines as Circuit Elements Lines - , λ/8, λ/4, λ/2, lines impedance Transformations, Significance of Zmin and Zmax, Smith Chart - Configuration and Applications, Single and Double Stub

TEXTBOOKS:

1. Engineering Electromagnetics, W. H. Hayt Jr., McGraw Hill – New York, 5th edition
2. EM Waves and Radiating Systems, E. C. Jordan, Pearson education, 2nd edition,2007
3. Elements of Electromagnetics, M.N.O.Sadiku, Oxford Press, 2002.

REFERENCES:

1. Transmission Lines and Networks- UmeshSinha, SatyaPrakashan, 2001,fl-ech. india Publications), New Delhi.
2. Electromagnetics with Applications, Kraus and Fleisch, McGraw Hill, 1999.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC AUTONOMOUS)

II Year B.Tech II Sem : ECE | L/T/P: -/3/- | C: 2

(AJ4413) PULSE AND DIGITAL CIRCUITS LAB

List of experiments:

Minimum eight experiments to be conducted:

1. Linear wave shaping
    a. RC Low pass circuit for different time constants
    b. RC High pass circuit for different time constants.
2. Non Linear Wave Shaping
    a. Transfer characteristics and response of clippers:
        i) Positive and negative clippers.
        ii) clipping at two independent levels.
    b. The steady state output waveform of clampers for a square wave input
        i) Positive and negative clampers.
        ii) Clamping at reference voltage.
3. Switching characteristics of a Transistor.
4. Bistable multivibrator.
5. Monostable multivibrator.
6. Astable multivibrator.
7. Schmitt Trigger
8. UJT Relaxation Oscillator.
9. Boot strap sweep circuit.
10. Miller sweep circuit

Equipment required for the Laboratory:

Regulated power supply	–	0 – 30 V
CRO‟s	-	0 – 20M Hz
Function Generators	--	0 – 1M Hz

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC AUTONOMOUS)

II Year B.Tech II Sem : ECE | L/T/P: -/3/- | C: 2

(AJ4414) ANALOG COMMUNICATIONS LAB

- *Minimum 12 experiments should be conducted:*
- *All these experiments are to be simulated first either using MATLAB, Comsim or any other simulation package and then to be realized in hardware.*

1. Amplitude modulation and demodulation.
2. DSB-SC Modulator & Detector
3. SSB-SC Modulator & Detector (Phase Shift Method)
4. Frequency modulation and demodulation.
5. Study of spectrum analyzer and analysis of AM and FM Signals
6. Pre-emphasis & de-emphasis.
7. Time Division Multiplexing & De multiplexing
8. Frequency Division Multiplexing & De multiplexing
9. Verification of Sampling Theorem
10. Pulse Amplitude Modulation & Demodulation
11. Pulse Width Modulation & Demodulation
12. Pulse Position Modulation & Demodulation
13. Frequency Synthesizer.
14. AGC Characteristics.
15. PLL as FM Demodulator

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(AUTONOMOUS)

(AJ509) OBJECT ORIENTED PROGRMMING & DATA STRUCTURES LAB

II Year II-Sem: **L/T/P** **C**

0/0/3 **2**

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.
    a. Search for a key element in a binary search tree.

1. 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 Prinicples and Practice using C++, B.Stroustrup, Addition-Wiesly (Pearson Education)
4. Data Structures and STL,W.J.Collins,mc Graw Hill,Internationational 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..

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC - AUTONOMOUS)

II Year B. Tech, II Semester All Branches

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

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 Innterdisciplinary Course, reasource 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.

REFERENCE BOOKS:

1. Sen, Amartya. "More than Once Million Women are Missing". New York Review of Books 37.20 (20 December 1990). Print. `We Were Making History……" Life Stories of Women in the Telangana People`s Struggle. New Delhi : Kali for Women, 1989.
2. Gautam, Liela and Gita Ramaswamy. "A „Conversation" between a Daughter and Mother". Broadsheel on Contemporany Politics. Special Issue on Sexuality and Harassment: Gender Politics on Campus Today. Ed.Madhumeeta Sinha and Asma Rasheed. Hydrabad: Anveshi research Center for Women`s Studies, 2014.
3. Abdulali Sohaila. " I Fought For My Life…and Won." Abailable online at: http://www.thealternative. In/lifestyle/i-fought-for-my lifeand-won-sohaila-abdulal/
4. Jeganathan Pradeep, Partha Chatterjee (Ed). "Community, Gender and Violence Subaltern Studies XI". Permanent Block and Ravi Dayal Publishers, New Delhi, 2000
5. K. Kapadia. The Violence of Development: The Politics of Identity, Gender and Social Inequalities in India. London: Zed Books, 2002.

6. S. Benhabib. Situating the self: Gender, Community, and Postmodernism in Contemporary Ethics, London:Routledge, 1992.
7. Virginia Woolf A Room of One`s Oxford: Black Swan. 1992.
8. T. Banuri and M. Mahmood, Just Development: Beyond Adjustment with a Human Face, Karachi: Oxford University Press, 1997.
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/>
10. K. Satyanarayana and Susie Tharu (Ed.) Steel Nibs Are Sprouting: New Dalit Writing From South India, Dossier 2: Telugu And Kannada http://harpercollints.co.in/BookDetail.asp?Book Code=3732
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.
12. Shatrughna, Veena et al. Women`s Work and its Impact on Child Health and Nutrition, Hyderabad, National Institute of Nutrition, India Council of Medcial Research 1993.
13. Stress Shakti Sanghatana. "We Were Making History…."Life Stories of Women in the Telangana People`s Struggle. New Delhi:Kali of Women, 1989.
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.
16. Javeed, Shayam and Anupam Manuhaar. "Women and Wage Discrimination in India: A Critical Analysis". International Journal of Humanilities and Social Science Invention 2, 4(2013).

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