ACADEMIC REGULATIONS
COURSE STRUCTURE
AND
DETAILED SYLLABUS

ELECTRICAL AND ELECTRONICS ENGINEERING

FOR

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

VAAGDEVI COLLEGE OF ENGINEERING
(Autonomous)
Bollikunta, Warangal-506 005
Telangana State, India

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

Bollikunta, Warangal – 506 005. T.S.

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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. Eligibility for Admission:

1.1 Admission to the Bachelor of Technology (B.Tech) Programme shall be made to a qualified candidate on the basis of the merit rank obtained by him/her at an Entrance Test conducted by the Telangana State Government (TSEAMCET) OR the Jawaharlal Nehru Technological University OR on the basis of any other order of merit approved by the authorized University by the Government, subject to the Rules of Reservations in force on the Telangana State from time to time.

1.2 The medium of instruction for the entire B.Tech programme is in English language.

2. Branches of B.Tech Programme:

The following branches of B.Tech Programme are offered for study.

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

3. Credit Courses:

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

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

4. Subject/Course Classification:

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

i. Foundation Courses (FC) are further categorized as
   a. BSH (Basic Sciences, Humanities and Social Sciences),
   b. ES (Engineering Sciences).

ii. Core Courses (CC) and Elective Courses (EC) are categorized as PS (Professional Subjects), which are further subdivided as
   a. PC (Professional/Departmental Core) subjects,
   b. PE (Professional/Departmental Elective)
   c. OE (Open Electives)
   d. PW (Project Work)

iii. Minor Courses (1 or 2 Credit Courses, belonging to BSH/ES/PC as per relevance); and

iv. Mandatory Courses (MC-non-credit oriented).

4.1 Course Nomenclature:

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

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

5. Course Registration:

5.1 Each student, on admission shall be assigned to a Faculty Advisor/Counselor who shall advise her/him about the academic programmes and counsel on the choice of courses in consideration with the academic background and student's career objectives.

5.2 Faculty advisor shall be only from the engineering departments. With the advice and consent of the Faculty Advisor the student shall register for a set of courses he/she plans to take up for each Semester.

5.3 The student should meet the criteria for prerequisites to become eligible to register for that course.

5.4 A student shall be permitted to register the prescribed credits per semester with a variation of ± 4 credits excluding Laboratories/Seminar/Project. However, registration for Repeat courses of previous semesters (Odd to Odd and Even to Even semesters) is allowed in excess of this limit. This is to encourage the average student to complete 1^{st} year before going to 3^{rd} year and/or complete 2^{nd} year before going to 4^{th} year.

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 3^{rd} week of the semester.

5.6 A student is allowed to register for more than 192 credits in completion of B.Tech programme. However, additional credits scored shall not be considered for award of division and also not considered for calculation of Semester Grade Point Average (SGPA) and Cumulative Grade Point Average (CGPA). For such extra subject(s) registered a letter grade alone will be indicated in the Grade card as a performance measure.

6. Subjects / Courses to be offered:

6.1 Students shall have to register for the courses during the preparation and practical examinations of the previous semester. However for the first year, the students have to register for courses one week after the commencement of class work.

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

6.3 The information on list of all the courses offered in every department specifying the credits, the prerequisites, a brief description of syllabus or list of topics and the time slot shall be made available to the student in time.

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

6.5 The registration for the inter departmental and/or open elective courses shall be on first come first served basis, provided the student fulfills prerequisites for that course, if any. The number of students to be registered shall be based on the class room and laboratory capacity. Every effort shall be made by the Department/Centre to accommodate as many students as possible.

6.6 More than one teacher may offer the same course in any semester.

6.7 No course shall be offered unless there is a minimum of 20 students or one third of the class strength specified.

7. Distribution and Weightage of Marks:

7.1 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.

7.2 For theory subjects the distribution shall be 30 marks for Internal Evaluation and 70 marks for the End-Examination.

7.3 For theory subjects, during the semester there shall be 2 mid-term examinations (internal exams) and two assignments carrying 5 marks each.

7.4 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,

7.5 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.

7.6 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.

7.7 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.

7.8 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.

7.9 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.

7.10 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.

7.11 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.

7.12 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.

7.13 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.

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

8. Attendance Requirements:

8.1 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.

8.2 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.

8.3 Shortage of attendance below 65% shall in no case be condoned.

8.4 Student falling short of attendance as specified above will be detained.

8.5 A student will not be promoted to the next semester unless he satisfies the attendance requirement of the present semester. They may seek-re-admission for that semester when offered next. They may seek re-registration for all those subjects registered in that semester in which he got detained, by seeking re-admission for that semester as and when offered; in case there are any professional electives and/or open electives, the same may also be re-registered if offered. However, if those electives are not offered in later semesters, then alternate electives may be chosen from the same set of elective subjects offered under that category.

A stipulated fee decided by the College Academic Council shall be payable towards condonation of shortage of attendance.

9. Academic Requirements:

The following academic requirements have to be fulfilled in addition to the attendance requirements mentioned in item no.08.

9.1 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.

9.2 A student shall be promoted from I year to II year only if he fulfills the academic requirement of 24 credits out of 48 credits up to the end of I year from the relevant regular and supplementary examinations, whether he takes those examinations or not.

9.3 A student shall be promoted from II year to III year only if he fulfills the academic requirement of 43 credits out of 72 credits up to II year I semester or 57 credits out of 96 credits secured from all the examinations both regular and supplementary conducted up to end of II year II semester, whether or not the candidate takes the examinations and secures prescribed minimum attendance in II year II semester.

9.4 A student shall be promoted from III year to IV year only if he fulfills the academic requirements of 72 credits out of 120 credits secured from all the examinations both regular and supplementary conducted up to end of III Year I semester or 86 credits out of 144 credits secured from all the examinations both regular and supplementary conducted up to end of III year II semester, whether or not the candidate takes the examinations and secures prescribed minimum attendance in III year II semester.

9.5 A student should earn all credits with an exemption of 8 credits in elective subjects. The marks obtained in the subjects excluding the subjects exempted shall be considered for the final calculation of CGPA and SGPA.

9.6 Student who fails to earn credits with an exemption of eight credits as indicated in the Programme structure within eight 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.

9.7 A student shall register for all subjects covering 192 credits as specified and listed (with the relevant course/subjects classifications as mentioned) in the course structure, put up all the attendance and academic requirements and securing a minimum of P Grade (Pass Grade) or above in each subject, and earn 184 credits securing Semester Grade Point Average (SGPA)$\geq$4.5 in each semester, and Cumulative Grade Point Average (CGPA) $\geq$ 4.5 at the end of each successive semester, to successfully complete the B.Tech Programme.

9.8 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.

9.9 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.

9.10 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.

10. Grading Procedure

10.1 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.

10.2 As a measure of the student's performance, a 10-point Absolute Grading System using the following Letter Grades (UGC Guidelines) and corresponding percentage of marks shall be followed.

Grades and Grade Points

% of Marks obtained in a Course	Letter Grade	Grade Point
>=80 to 100	O (Outstanding)	10
>=70 to < 80	A+ (Excellent)	9
>=60 to < 70	A (Very Good)	8
>=55 to < 60	B+(Good)	7
>=50 to < 55	B (Above Average)	6
>=45 to < 50	C (Average)	5
>=40 to < 45	P (Pass)	4
Less than 40	F (Fail)	0
0	Ab (Absent)	0

10.3 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.

10.4 A Letter Grade does not imply any specific % of Marks.

10.5 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. 9.8-9.9).

10.6 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

10.7 The student passes the Subject/Course only when he gets G.P.≥4 (P Grade or above).

10.8 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.

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

$$\left\{\sum_{j=1}^{M} C_j G_j\right\} / \left\{\sum_{j=1}^{M} C_j\right\}$$ ….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 1st Semester onwards upto and inclusive of the semester S (obviously M>N), 'j' is the subject indicator index takes into account all subjects from 1 Subject and $\mathbf{G_i}$ 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.

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

10.11 For calculation listed in item no.10.6-10.10**,** performance in failed subjects/Courses (Securing F Grade) will also be taken into account and the credits of such Subjects/Courses will also be included in the multiplications and summations.

11. Passing Standards:

11.1 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.

11.2. 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.8-9);

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.

11.3. 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.

11.4 After the Completion of each semester, a Grade Card or Grade Sheet (or Transcript) shall be issued to all the Registered Students of that Semester, indicating the Letter Grades and Credits earned. It will show the details of the Courses Registered (Course Code, Title, Number of Credits, Grade earned etc.), credits earned, SGPA and CGPA.

12. Declaration of Results:

12.1 Computation of SGPA and CGPA are done using the procedure listed in item no.10.6 – 10.10.

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

% of Marks = (Final CGPA – 0.5) X 10

13. Award of Degree:

13.1 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 184 credits with an exemption of 8 credits in elective subjects only.

iii. Secures Cumulative Grade Point Average (CGPA) $\geq$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.

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

Award of Division:

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

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

14. 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.

15. 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).

16. 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.

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 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 8 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 only if he fulfills the academic requirement of 14 credits out of 24 credits up to II year I semester or 29 credits out of 48 credits secured from all the examinations both regular and supplementary conducted up to end of II year II semester, whether or not the candidate takes the examinations and secures prescribed minimum attendance in II year II semester.

   ii. A student shall be promoted from III year to IV year only if he fulfills the academic requirements of 43 credits out of 72 credits secured from all the examinations both regular and supplementary conducted up to end of III Year I semester or 57 credits out of 96 credits secured from all the examinations both regular and supplementary conducted up to end of III year II semester, whether or not the candidate takes the examinations and secures prescribed minimum attendance in III year II 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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MALPRACTICES RULES

DISCIPLINARY ACTION FOR / IMPROPER CONDUCT IN EXAMINATIONS

	Nature of Malpractices/Improper Conduct	**Punishment**
	If the candidate:	
1. (a)	Possesses or keeps accessible in examination hall, any paper, note book, programmable calculators, Cell phones, pager, palm computers or any other form of material concerned with or related to the subject of the examination (theory or practical) in which he is appearing but has not made use of (material shall include any marks on the body of the candidate which can be used as an aid in the subject of the examination)	Expulsion from the examination hall and cancellation of the performance in that subject only.
(b)	Gives assistance or guidance or receives it from any other candidate orally or by any other body language methods or communicates through cell phones with any candidate or persons in or outside the exam hall in respect of any matter.	Expulsion from the examination hall and cancellation of the performance in that subject only of all the candidates involved. In case of an outsider, he will be handed over to the police and a case is registered against him.
2.	Has copied in the examination hall from any paper, book, programmable calculators, palm computers or any other form of material relevant to the subject of the examination (theory or practical) in which the candidate is appearing.	Expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted to appear for the remaining examinations of the subjects of that Semester. The Hall Ticket of the candidate is to be cancelled.
3.	Impersonates any other candidate in connection with the examination.	The candidate who has impersonated shall be expelled from examination hall. The candidate is also debarred and forfeits the seat. The performance of the original candidate, who has been impersonated, shall be cancelled in all the subjects of the examination (including practicals and project work) already appeared and shall not be allowed to appear for examinations of the remaining subjects of that

		semester/year. The candidate is also debarred for two consecutive semesters from class work and all University examinations. The continuation of the course by the candidate is subject to the academic regulations in connection with forfeiture of seat. If the imposter is an outsider, he will be handed over to the police and a case is registered against him.
4.	Smuggles in the Answer book or additional sheet or takes out or arranges to send out the question paper during the examination or answer book or additional sheet, during or after the examination.	Expulsion from the examination hall and cancellation of performance in that subject and all the other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester/year. The candidate is also debarred for two consecutive semesters from class work and all University examinations. The continuation of the course by the candidate is subject to the academic regulations in connection with forfeiture of seat.
5.	Uses objectionable, abusive or offensive language in the answer paper or in letters to the examiners or writes to the examiner requesting him to award pass marks.	Cancellation of the performance in that subject.
6.	Refuses to obey the orders of the Chief Superintendent/Assistant – Superintendent / any officer on duty or misbehaves or creates disturbance of any kind in and around the examination hall or organizes a walk out or instigates others to walk out, or threatens the officer-in charge or any person on duty in or outside the examination hall of any injury to his person or to any of his relations whether by words, either spoken or written or by signs or by visible representation, assaults the officer-incharge, or any person on duty in or outside the examination hall or any of his relations, or indulges in any other act of misconduct or	In case of students of the college, they shall be expelled from examination halls and cancellation of their performance in that subject and all other subjects the candidate(s) has (have) already appeared and shall not be permitted to appear for the remaining examinations of the subjects of that semester/year. The candidates also are debarred and forfeit their seats. In case of outsiders, they will be handed over to the police and a police case is registered against them.

	mischief which result in damage to or destruction of property in the examination hall or any part of the College campus or engages in any other act which in the opinion of the officer on duty amounts to use of unfair means or misconduct or has the tendency to disrupt the orderly conduct of the examination.	
7.	Leaves the exam hall taking away answer script or intentionally tears of the script or any part thereof inside or outside the examination hall.	Expulsion from the examination hall and cancellation of performance in that subject and all the other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester/year. The candidate is also debarred for two consecutive semesters from class work and all University examinations. The continuation of the course by the candidate is subject to the academic regulations in connection with forfeiture of seat.
8.	Possess any lethal weapon or firearm in the examination hall.	Expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester/year. The candidate is also debarred and forfeits the seat.
9.	If student of the college, who is not a candidate for the particular examination or any person not connected with the college indulges in any malpractice or improper conduct mentioned in clause 6 to 8.	Student of the colleges expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester/year. The candidate is also debarred and forfeits the seat. Person(s) who do not belong to the College will be handed over to police and, a police case will be registered against them.

10.	Comes in a drunken condition to the examination hall.	Expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester.
11.	Copying detected on the basis of internal evidence, such as, during valuation or during special scrutiny.	Cancellation of the performance in that subject and all other subjects the candidate has appeared including practical examinations and project work of that semester/year examinations.
12.	If any malpractice is detected which is not covered in the above clauses 1 to 11 shall be reported to the University for further action to award suitable punishment.	

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
ELECTRICAL & ELECTRONICS ENGINEERING

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

I YEAR **I SEMESTER**

S.No.	Code	Subject	L	T	P	Credits
1	A9001	Mathematics- I	4	0	0	4
2	A9012	English	3	0	0	3
3	A9007	Applied Physics	4	0	0	4
4	A9011	Engineering Chemistry	3	0	0	3
5	A9303	Engineering Graphics	2	0	4	4
6	A9013	English Language Communication Skills Lab	0	0	3	2
7	A9008	Applied Physics Lab	0	0	3	2
8	A9307	Engineering Workshop & IT Work Shop	0	0	3	2
		Total	**16**	**0**	**13**	**24**

I YEAR **II SEMESTER**

S.No.	Code	Subject	L	T	P	Credits
1	A9002	Mathematics – II	3	1	0	4
2	A9014	Environmental Studies	3	0	0	2
3	A9004	Computational Mathematics	2	0	0	2
4	A9201	Electrical Circuits - I	3	1	0	4
5	A9401	Electronic Devices and Circuits	4	0	0	4
6	A9501	Problem solving and Computer Programming	4	0	0	4
7	A9403	Electronic Devices and Circuits Lab	0	0	3	2
8	A9502	Problem solving and Computer Programming Lab	0	0	3	2
		Total	**19**	**2**	**6**	**24**

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
ELECTRICAL & ELECTRONICS ENGINEERING

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

II – YEAR **I - SEMESTER**

S.No.	Code	Subject	L	T	P	Credits
1	A9003	Mathematics-III	3	1	0	3
2	A9205	Electromagnetic Fields	4	0	0	4
3	A9206	Electrical Circuits –II	4	0	0	4
4	A9207	Electrical Machines-I	4	0	0	4
5	A9506	Data Structures Through C++	3	0	0	3
6	A9208	Electrical Circuits Lab	0	0	3	2
7	A9015	Computational Mathematics Lab	0	0	3	2
8	A9507	Data Structures Through C++ Lab	0	0	3	2
9	A9020	Personality Development & Soft Skills*	2	0	0	0
Total			**20**	**01**	**09**	**24**

II – YEAR **II - SEMESTER**

S.No.	Code	Subject	L	T	P	Credits
1	A9211	Power Systems-I	3	1	0	3
2	A9212	Electrical Machines –II	4	0	0	4
3	A9213	Electrical Measurements and Instrumentation	4	0	0	4
4	A9359	Thermal and Hydro Prime Movers	3	0	0	3
5	A9407	Switching Theory and Logic Design	3	1	0	3
6	A9447	Pulse Digital and Linear Integrated Circuits	3	0	0	3
7	A9214	Electrical Machines-I Lab	0	0	3	2
8	A9448	IC PDC Lab	0	0	3	2
9	A9019	Gender Sensitization*	2	0	0	0
Total			**22**	**02**	**06**	**24**

Note**: '***'** indicates mandatory course offering zero credits

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
ELECTRICAL & ELECTRONICS ENGINEERING

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

III YEAR **I SEMESTER**

S.No.	Code	Subject	L	T	P	Credits
1	A9215	Power Systems—II	4	0	0	4
2	A9216	Control Systems	4	1	0	4
3	A9217	Power Electronics	4	0	0	4
4	A9218 A9219 A9220	**Professional Elective-I** 1. Renewable Energy Sources 2. Reliability Engineering 3. Electrical Engineering Materials	3	0	0	3
5	A9221	Electrical Machines –III	3	1	0	3
6	A9222	Electrical Measurements Lab	0	0	3	2
7	A9223	Electrical Machines -II lab	0	0	3	2
8	A9224	Basic Simulation Lab	0	0	3	2
		Total	**18**	**2**	**9**	**24**

III YEAR **II SEMESTER**

S.No.	Code	Subject	L	T	P	Credits
1	A9225	Power Semiconductor Drives	4	0	0	4
2	A9226	Power System Operation and Control	4	0	0	4
3	A9621 A9455 A9512 A9025	**Open Elective-I** 1.Managerial Economics & Financial Analysis 2. Principles of Communication Systems 3.Core JAVA 4.Optimization Techniques	3	0	0	3
4	A9227 A9228 A9229	**Professional Elective-II** 1. High Voltage Engineering 2. FACTS 3. Advanced Control Systems	3	0	0	3
5	A9230 A9231 A9464	**Professional Elective-III** 1. Utilization of Electrical Energy 2. HVDC Transmission 3. VLSI Technology & Design	4	0	0	4
6	A9021	Advanced English Language and Communication Skills Lab	0	0	3	2
7	A9232	Control Systems Lab	0	0	3	2
8	A9233	Power Electronics and Drives Lab	0	0	3	2
9	A9018	Logical Reasoning and Quantitative Aptitude *	2	0	0	0
		Total	**20**	**0**	**9**	**24**

Note**: '***' indicates mandatory course offering zero credits

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
ELECTRICAL & ELECTRONICS ENGINEERING

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

IV YEAR **I SEMESTER**

S.No.	Code	Subject	L	T	P	Credits
1	A9465	Microprocessors and Micro Controllers Architecture & Programming	3	1	0	3
2	A9234	Switch Gear and Protection	4	0	0	4
3	A9511 A9571 A9622	**Open Elective-II** 1. Database Management System 2. Advanced JAVA 3. Management Science	3	0	0	3
4	A9235 A9236 A9423	**Professional Elective-IV** 1. Computer Methods in Power Systems 2. Linear System Analysis 3. Digital Signal Processing	3	0	0	3
	A9237 A9238 A9239 A9430	**Professional Elective-V** 1. Electrical Distribution Systems 2. Neural Networks and Fuzzy Systems 3. Digital Control Systems 4. Embedded Systems	3	1	0	3
6	A9240	Power Systems Lab	0	0	3	2
7	A9428	Microprocessors and Micro Controllers Lab	0	0	3	2
8	A9241	Simulation of Electrical Systems Lab	0	0	3	2
9	A9242	Mini Project	0	0	3	2
		Total	**16**	**2**	**12**	**24**

IV YEAR **II SEMESTER**

S.No.	Code	Subject	L	T	P	Credits
1	A9243 A9244 A9545 A9245	**Professional Elective-VI** 1. Advanced Power Electronics 2. Electrical Machine Design 3. Soft Computing 4. Power Quality	3	0	0	3
2	A9624 A9121 A9542 A9564	**Open Elective-III** 1. Entrepreneurship Development 2. Disaster Management 3. Cloud Computing 4. Computer Organization	3	0	0	3
3	A9246	Seminar	3	0	0	3
4	A9247	Comprehensive viva	0	0	0	3
5	A9248	Major Project	0	0	15	12
		Total Credits	**12**	**0**	**0**	**24**

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(A9001) MATHEMATICS-I

I Yr. I Sem: Common to all branches	**L**	**T**	**P**	**C**
	4	**0**	**0**	**4**

Course Objective:

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

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

UNIT–I:

Ordinary differential equations of first order:

Formation of differential equations**,** solution of differential equations of First order and First degree. Exact differential equations, Non exact differential equations, Bernouli's Differential equations, Orthogonal Trajectories.

UNIT-II:

Ordinary linear differential equations of higher order:

Homogenous, Non Homogenous linear differential equations of higher order of the form e^{ax}, Sinax, Cosax, Polynomials in x, e^{ax} v(x), x^k v(x), Method of variation of parameters.

UNIT – III:

Differential calculus:

Rolle's Mean Value theorem, Lagrange's Mean Value Theorem, Cauchy's Mean Value Theorem, Taylor's Theorem (without proof). Jacobian, Maxima and Minima of functions of two variables.

UNIT – IV:

Improper integration and multiple integrals:

Multiple integrals - Double & Triple integrals. Change of variables and Change of order of integration.

UNIT – V:

Laplace Transformation:

Laplace transform - Inverse Laplace transform - properties of Laplace transforms - Laplace transforms of unit step function, impulse function & periodic function, convolution theorem (without proof), applications of ordinary differential equations.

Learning Outcomes:

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

Recommended Text Books:

1. R. K. Jain and S. R. K. Iyengar: Advanced Engineering Mathematics, Narosa Publishing House, 2008
2. B. S. Grewal: Higher Engineering Mathematics, Khanna Publications, 2009.

Reference Book:

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

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(A9012) ENGLISH

I Year B. Tech. 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:

Importance of communication in English-Globalisation-changing trends-barriers to communication

Unit –II:

- 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

G-Types of Nouns and Pronouns

V- Homonyms, homophones synonyms, antonyms

Unit –III

- 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

G- Verb forms

V- Noun, verb, adjective and adverb

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

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

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

- Usage of correct English Language, written and spoken
- Enrichment of comprehension and fluency
- 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. **Innovate with English: A Course in English for Engineering Students,** edited by T Samson, Foundation Books.
3. English for Employability-**K. Purushotham, Orient Blackswan** (with CD).
4. Listening & Speaking Skills **Book I and Book II, Cambridge Publishers** (with CD's).
5. English Grammar Practice**, Raj N Bakshi, Orient Longman.**
6. **Technical Communication** by Daniel Riordan. 2011. **Cengage Publications. New Delhi.**
7. **Effective English, edited** by E Suresh Kumar, A RamaKrishna Rao, P Sreehari, Published by **Pearson**
8. Handbook of English Grammar and Usage**, Mark Lester and Larry Beason, Tata Mc Graw –Hill.**
9. Spoken English**, R.K. Bansal & JB Harrison, Orient Longman.**
10. Technical Communication, **Meenakshi Raman, Oxford University Press**
11. Objective English **Edgar Thorpe & Showick Thorpe**, **Pearson Education**
12. Grammar Games**, Renuvolcuri Mario, Cambridge University Press.**
13. Everyday Dialogues in English**, Robert J. Dixson, Prentice Hall India Pvt Ltd.,**
14. ABC of Common Errors **Nigel D Turton, Mac Millan Publishers.**
15. Basic Vocabulary **Edgar Thorpe & Showick Thorpe**, **Pearson Education**
16. Effective Technical Communication**, M Ashraf Rizvi, Tata Mc Graw –Hill.**
17. An Interactive Grammar of Modern English, **Shivendra K. Verma and Hemlatha Nagarajan , Frank Bros & CO**
18. A Communicative Grammar of English, **Geoffrey Leech, Jan Svartvik, Pearson Education**
19. Enrich your English, **Thakur K B P Sinha, Vijay Nicole Imprints Pvt Ltd.,**
20. A Grammar Book for You And I, **C. Edward Good, MacMillan Publishers.**
21. Practical English Usage **(ELBS) Michael Swan.**
22. Examine Your English – **Margaret Maison.**
23. The Parts of Speech: **Prof. P. Satyanarayana, P.C. Ray Publications,** Warangal, 2003.
24. The Tense: **Prof. P. Satyanarayana, P.C. Ray Publications,** Warangal 2003

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(A9007) APPLIED PHYSICS

I year B. Tech. I-SEM, ECE, CSE & EEE

L	T	P	C
4	0	0	4

Objectives:

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

UNIT-I:

Elements of Statistical Mechanics & Quantum Mechanics

Elements of Statistical Mechanics: Phase space, Ensembles & their types, Maxwell-Boltzmann, Bose-Einstein and Fermi-Dirac statistics (qualitative treatment), Density of states, Fermi level.

Quantum Mechanics: Waves and Particles, de Broglie hypothesis, Davisson and Germer's experiment, Heisenberg's uncertainty principle, Schrodinger time independent wave equation, Physical significance of the wave function, Particle in one dimensional potential box (discussion of results only).

UNIT-II:

Electron theory of metals & Band theory of solids.

Electron theory of metals: The classical free electron theory of metals, Electrical conductivity, Mean free path, Relaxation time and Drift velocity, Successes and drawbacks of free electron theory.

Band theory of solids: 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-III:

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 and 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-IV:

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 & their applications in engineering.

UNIT-V:

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 system.

Learning Outcomes:

1. The student learns about statistical mechanics and quantum mechanics.
2. The student learns about classical free electron theory of metals and its successes along with its drawbacks.
3. The student learns about classification of solids by band theory.
4. The student learns how to calculate number of charge carriers in a semi conductor.
5. The student learns about fabrication of semi conductors into devices.
6. The student learns about dielectrics and magnetic materials along with their engineering applications.
7. The student learns about lasers, their construction and applications in engineering field.
8. The student learns about fundamentals of optical fibres and their applications.
9. The student learns about nano materials and their fabrication methods along with their characterisation by SEM.

Recommended Text Books:

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

Reference Books:

1. Engineering Physics, V. Rajandran, Tat Mc. Graw Hill Book Publishers.
2. Solid State Physics – M.Armugam, Anuradha Publications.
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, Dr. K. Bhattacharya, A. Bhaskaran, Oxford Press.
7. Engineering Physics, K. Vijay Kumar, T. Sreekanth, S. Chand Publications.
8. Engineering Physics, D.K. Bhattacharya, Poonam Tandon, Oxford University Press

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(A9011) ENGINEERING CHEMISTRY

	L	T	P	C
I Year B. Tech. I-SEM CIVIL, MECH. & EEE				
II-SEM ECE & CSE	**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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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(A9303) ENGINEERING GRAPHICS

I Year-I-Sem: EEE, CSE	**L T P C**
II-Sem: ECE	**2 0 4 4**

COURSE OBJECSTIVES:
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.
Scales: Plain scale, Diagonal scale & Vernier scale.

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

UNIT-III

SECTIONS AND SECTIONAL VIEWS: Right Regular Solids – Prism, Cylinder, Pyramid, Cone & Auxiliary views.
DEVELOPMENT OF SURFACES: Right Regular Solids – Prism, Cylinder, Pyramid, Cone and their parts.

UNIT-IV

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.

UNIT-V

TRANSFORMATION OF PROJECTIONS: Conversion of Isometric Views to Orthographic Views & Vice versa.

Text Books

1. Engineering Drawing. N.D.Bhatt
2. Engineering Drawing – Besant, Agrawal, TMH

References Books:

1. Engineering Graphics. P I Varghese Tata McGraw Hill Education Pvt. Ltd.
2. Engineering drawing – P.J.Shan S.Chand Publihers.
3. Engineering Drawing – Johle/Tata Macgraw Hill Book Publishers.
4. Engineering Drawing – M.B.Shah and B.C.Rana, pearson.
5. Engineering Drawing by K.Venu Gopal & V.Prabu Raja New Age publications.
6. Engineering Drawing by John. PHL Learning Publisher.

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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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(A9013) ENGLISH LANGUAGE COMMUNICATION SKILLS LAB

	L	T	P	C
I year B. Tech. I Sem EEE, ECE, CIVIL & MECH				
II Sem CSE	**0**	**0**	**3**	**2**

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

Course Objectives:

- To facilitate computer-aided multi-media instruction enabling individualized and independent language learning
- To sensitise 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. Situational Enlgish, Prof. Damodar 33 situations BIE Publications (with CD)
2. Radio lessons, Prof. G. Damodar.
3. Rama Krishna Rao, A. *et al. English Language Communication Skills – A Reader cum Lab Manual Course Content and Practice.* Chennai: Anuradha Publishers
4. Suresh Kumar, E. & Sreehari, P. 2009. *A Handbook for English Language Laboratories.* New Delhi: Foundation
5. *Speaking English Effectively* 2nd Edition by Krishna Mohan and N. P. Singh, 2011. Macmillan Publishers India Ltd. Delhi.
6. Sasi Kumar, V & Dhamija, P.V. *How to Prepare for Group Discussion and Interviews.* Tata McGraw Hill
7. Hancock, M. 2009. *English Pronunciation in Use. Intermediate.* Cambridge: CUP
8. Spoken English: A Manual of Speech and Phonetics by R. K. Bansal & J. B. Harrison. 2013. Orient Blackswan. Hyderabad.
9. Hewings, M. 2009. *English Pronunciation in Use. Advanced*. Cambridge: CUP
10. Marks, J. 2009. *English Pronunciation in Use. Elementary.* Cambridge: CUP
11. Nambiar, K.C. 2011. *Speaking Accurately. A Course in International Communication*. New Delhi : Foundation
12. Soundararaj, Francis. 2012. *Basics of Communication in English. New Delhi: Macmillan*
13. *Spoken English* (CIEFL) in 3 volumes with 6 cassettes, OUP.
14. *English Pronouncing Dictionary* Daniel Jones Current Edition with CD.
15. *A Textbook of English Phonetics for Indian Students* by T.Balasubramanian (Macmillan)
16. *Topical Thoughts – (A Textbook of Reading and Writing Skills) Dr.P. Satyanarayana, Vaagdevi College of Engineering, Warangal Publications, 2013.*

DISTRIBUTION AND WEIGHTAGE OF MARKS

English Language Laboratory Practical Examination:

- The practical examinations for the English Language Laboratory shall be conducted as per the University norms prescribed for the core engineering practical sessions.

For the Language lab sessions, there shall be a continuous evaluation during the year for 25 sessional marks and 50 year-end Examination marks. Of the 25 marks, 15 marks shall be awarded for day-to-day work and 10 marks to be awarded by conducting Internal Lab Test(s). The year- end Examination shall be conducted by the teacher concerned with the help of another member of the staff of the same department .of the same institution.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(A9008) APPLIED PHYSICS LAB

I Year B. Tech. I-SEM, ECE, CSE & EEE

L	T	P	C
0	0	3	2

Objectives:

The purpose of doing the experiments in laboratory is not simply to verify a principle but also to explore the other related phenomena and to find their applicability. The students are suggested to work in this direction and get benefit out of it.

1. To get practical knowledge which is related to the engineering course in the development of new technologies.
2. To impart fundamental knowledge in handling the equipment in Physics laboratory.
3. To offer practical experience on the basic equipment related to engineering Physics.
4. For practical understanding of the theoretical concepts of Physics.
5. To develop inquisitiveness in handling physics equipment leading to new technologies.

S. No. Name of the Experiment

1. Study of LED and LASER diode characteristics.
2. Torsional Pendulum-determination of rigidity modulus of material of a wire.
3. Determination of energy gap of material of p-n junction.
4. Bending losses of optical fibres and evaluation of numerical aperture of a given optical fibre.
5. Study of Decay of charge & determination of time constant of an RC circuit.
6. Determination of resonant frequency and quality factor of LCR circuit.
7. Study of Characteristics of solar cell
8. Determination of wavelength of Laser source – Diffraction grating.
9. Determination of frequency of AC supply-sonometer.
10. Determination of dispersive power of a material of a prism-spectrometer.

Laboratory Manual:

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

Course Outcomes:

- The laboratory course helps the student how to operate different equipments related to engineering. It also allows the student to develop experimental skills to design new experiments in engineering.
- The course enlightens the student about modern equipment like solar cell, optical fibre etc.,
- With the exposure to these experiments, the student can compare the theory and correlate with experiment.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(A9307) ENGINEERING WORKSHOP/IT WORKSHOP

I Year I-Sem EEE
I Year II-Sem Civil, Mechanical, ECE

L	T	P	C
0	0	3	2

COURSE OBJECSTIVES:
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: (Any six trades from the following for Mechanical Engineering Branch & Any four trades for all other Branches with minimum of two exercises in each trade)
1. Carpentry
2. Fitting
3. Tin – Smithy
4. Black Smithy
5. House – wiring
6. Foundry
7. Plumbing
8. Soldering

UNIT – II

TRADES FOR DEMONSTRATION & EXPOSURE
1. Demonstration of Power tools & wiring
2. Welding.
3. Machine Shop

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 Foundry, Welding, Black smithy, Fitting, Machine shop 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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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(A9002) MATHEMATICS – II

I Yr. II Sem: Common to all branches	**L**	**T**	**P**	**C**
	3	**1**	**0**	**4**

Course Objective:

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

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

Unit-I :
Solution of Linear System:

Matrix and types of Matrices Elementary row and column operations on a matrix, Rank of matrix –Echelon and Normal form, Linear dependence and independence of vectors, solutions of systems of linear equations using elementary operations.

Unit-II:
Eigen values and Eigen vectors:

Eigen values and Eigen vectors of a matrix and their properties, Cayley-Hamillton theorem and its applications, Complex matrices-Hermitian, Skew-Hermitian and Unitary matrices.

Unit – III:
Fourier series:

Determination of Fourier Coefficients, Even and Odd functions, Half Range Fourier Sine and Cosine expansions Fourier series in an arbitrary interval.

Unit - IV:
Vector Calculus:

Scalar and Vector fields; directional derivatives - Gradient of scalar field, Divergence and Curl of a vector field -Vector integration: Green's theorem, Gauss Divergence theorem, Stoke's theorem (without proof).

Unit – V:
Partial differential equation:

Formation of partial differential Equation by elimination of arbitrary constants and arbitrary functions, solutions of first order linear and
non-linear Equations. Method of separation of variables.

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. R.K.Jain and S.R.K.Iyengar : Advanced Engineering Mathematics, Narosa Publishing House, 2008
2. B. S. Grewal : Higher Engineering Mathematics, Khanna Publications, 2009.

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

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(A9014) ENVIRONMENTAL STUDIES

	L	T	P	C
I Yr I Sem: ECE				
II Sem: EEE	**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, 4th Edition, New age international publishers.
5. Text book of Environmental Science and Technology – Dr. M. Anji Reddy 2007, BS Publications.
6. The syllabus of Environmental Studies prescribed by UGC/JNTUH is approved for adoption.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(A9004) COMPUTATIONAL MATHEMATICS

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

Course Objective:

The main aim of the computational mathematics to examine the constructive abstract methods of mathematics when illustrated with suitable numerical techniques. Computational 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, Numerical solution of algebraic and transcendental equations by Bisection Method, Regular-Falsi method, Newton-Raphson's method .

Unit – II:
Interpolation:
Interpolation Introduction, Finite differences-Forward Differences-Backward differences-central differences Symbolic relations and separation of symbols, Newton's formulae for interpolation. Interpolation with un-equally spaced points-Lagrange's Interpolation formula.

Unit – III:
Curve Fitting:
Least square method- Fitting of a straight line-Second degree curve, Exponential curve-power curve.

Unit – IV:
Numerical Differentiation & Integrations:
Numerical differentiation of 1^{st} & 2^{nd} order. Numerical Integration with Trapezoidal rule, Simpson's $1/3^{rd}$ rule, Simpson's (3/8) rule

Unit – V:
Numerical solutions of ordinary Differential Equations:
Solutions of first order ordinary differential equations by Euler's Method,
Euler's -Modified Method, Runge-kutta methods.

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 interpitate 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.

Recommended Text Books:

1. B.S.Grewal : Higher Engineering Mathematics, Khanna Publications, 2009.
2. M.K. Jain S.R.K. Iyengar and R.K.Jain: Numerical methods for Scientific andEngineering Computation,Wiley Eastern

Reference Book:

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

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(A9201) ELECTRCAL CIRCUITS-I

I Year II Sem: EEE **L/T/P/D/C**
4/ 1/0/0/ 4

Course Objectives:

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

- Single phase circuits
- Locus diagram, Resonance,
- Magnetic circuits and theorems.

UNIT-I:

Introduction to Electrical circuits:

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

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

UNIT-II:

Single phase AC Circuits:

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

UNIT-III:

Locus diagram and Resonance:

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

UNIT-IV:

Network Theorems (with D.C and A.C Excitation)

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

UNIT-V:

Magnetic circuits:

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

TEXT BOOKS:

1. Engineering Circuit Analysis by William Hayt and Jack E. Kemmerly, McGraw Hill Company, 6th edition.
2. Network Analysis by A.Sudhakar and Shyammohan S Palli, Tata MC Graw Hill
3. Electrical Circuits by A.Chakrabarthy, Dhanpat Rai & Sons.

REFERENCE BOOKS:

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

COURSE OUTCOMES:

- After going through this course the student will able to basics of circuit concepts, electrical parameters, single phase AC circuits, magnetic circuits, resonance, and network theorems with which he/she can able to apply the above conceptual things to real-world problems and applications.
- Analyze and solve electric & magnetic circuits, Analyze circuit's response to sinusoidal execution. Find the applications of resonance, Able to apply theorems to solve complicated real time applications.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(A9401) ELECTRONIC DEVICES AND CIRCUITS

I Year II Sem: ECE, EEE

L	T	P	C
4	0	0	4

Objectives:

This is a fundamental course, basic knowledge of which is required by all the circuit branch engineers. This course focuses:

- To familiarize the student with the principle of operation, analysis and design of Junction diode, BJT and FET transistors and amplifier circuits.
- To understand diode as rectifier.
- To study principle of filter circuits and various types.

UNIT - I:

P-N Junction Diode: Qualitative Theory of P-N Junction, P-N Junction as a Diode, Diode Equation, Volt- Ampere Characteristics, Temperature dependence of VI characteristic, Ideal versus Practical – Resistance levels (Static and Dynamic), Transition and Diffusion Capacitances, varactor diode, Diode Equivalent Circuits, Load Line Analysis, Breakdown Mechanisms in Semiconductor Diodes, Zener Diode Characteristics.

UNIT-II:

Rectifiers and Filters : The P-N junction as a Rectifier, Half wave Rectifier, Full wave Rectifier, Bridge Rectifier, Harmonic components in a Rectifier Circuit, Inductor Filters, Capacitor Filters, L- Section Filters, π- Section Filters, Comparision of Filters, Voltage Regulation using Zener Diode.

UNIT-III:

Bipolar Junction Transistor and UJT: The Junction Transistor, Transistor Current Components, Transistor as an Amplifier, Transistor Construction, BJT Operation, BJT Symbol, Common Base, Common Emitter and Common Collector Configurations, Limits of Operation , BJT Specifications, 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, Emitter Feedback Bias, Collector - Emitter Feedback Bias, Voltage Divider Bias, Bias Stability, Stabilization Factors, Stabilization against variations in V_{BE} and β, Bias Compensation using Diodes and Transistors, Thermal Runaway, Thermal Stability, Analysis of a Transistor Amplifier Circuit using h- Parameters.

UNIT-V:

Field Effect Transistor and FET Amplifiers

Field Effect Transistor: The Junction Field Effect Transistor (Construction, principle of operation, symbol) – Pinch-off Voltage - Volt-Ampere characteristics, The JFET Small Signal Model, MOSFET (Construction, principle of operation, symbol), MOSFET Characteristics in Enhancement and Depletion modes.

TEXT BOOKS:

1. Millman's Electronic Devices and Circuits – J. Millman, C.C. Halkias, and Satyabrata Jit, 2 Ed.,1998, TMH.
2. Electronic Devices and Circuits – Mohammad Rashid, Cengage Learing, 2013
3. Electronic Devices and Circuits – David A. Bell, 5 Ed, Oxford University Press.

REFERENCE BOOKS:

1. Integrated Electronics – J. Millman and Christos C. Halkias, 1991 Ed., 2008, TMH.
2. Electronic Devices and Circuits – R.L. Boylestad and Louis Nashelsky, 9 Ed., 2006, PEI/PHI.
3. Electronic Devices and Circuits - K. Lal Kishore, 2 Ed., 2005, BSP.
4. Electronic Devices and Circuits – S.Salivahanan, N.Suresh Kumar, A.Vallavaraj, 2 Ed., 2008, TMH.

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 oscillatorsemploying BJT, FET devices.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(A9501) PROBLEM SOLVING & COMPUTER PROGRAMMING

IYear I-Sem: ECE & CSE **L/T/P C**
II-Sem: EEE **4/- /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.

Syllabus Content
Unit-1 (20%)
Meaning of Problem Solving – Polya's 4 Steps: Understanding the problem, Devising a plan, Carrying out the Plan, Looking back–Examples. (5%)
Introduction to programming, Algorithms and Flowcharts. Basics of C Language. Input and Output. Elementary problems and program writing. (15%)

Unit-2 (20%)
Control Statements in C: Conditional Execution and Selection, Iterative and Repetitive Execution, Termination. Nested Loops.
Arrays and Strings: Working with One-Dimensional Arrays, String Manipulation. Working with Multidimensional Arrays, Manipulating String Arrays.
Functions: Prototypes and Definition, Working with Functions, Passing Parameters To Functions. Introduction to Recursion. Scope and Storage Classes.

Unit-3 (20%)
Pointers in C: Preliminary Concepts–One-Dimensional Arrays and Pointers, Pointers and Strings, Pointer Arithmetic, Pointers to Pointers, Arrays of Pointers, Pointers to an Array, Multidimensional Arrays and Pointers, Pointers to Functions, Arrays of Function Pointers, Dynamic Memory Handling and Problems.

Unit-4 (20%)
User Defined Data Types and Variables. Structures, Unions, Enumeration Types, Bitwise Operators, Command-Line Arguments, C Preprocessor, Memory Models and Pointers.

Unit-5 (20%)
Files In C: Using Files in C, Working with Text Files, Working with Binary Files, Direct File Input and Output. Files of Records, Random Access into Files of Records–File Management Functions.

Text Book:
1. Programming in C, Pradip Dey& Manas Ghosh, 2ndEd, Oxford University Press,2013 (Chapters 1, 2, 3, 4, 5 excluding 5.2.6, 6.1 to 6.8, 6.10.1, 7, 8, 9, 11)

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, 2nd Edition, W. W. Norton & Company; New York, 2008.
6. Programming in C–A Complete Introduction To The C Programming Language, Stephen G. Kochan 3rdEd., Sams Publishing,2005.

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-7: 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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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(A9403) ELECTRONIC DEVICES AND CIRCUITS LAB

I Year B.Tech. EEE-II Sem **L T/P/D C**
- - /-/3/- 2

Course Objectives:
The main objective of this course is

- To make student well versed with basic electronic components & equipment.
- Describe physical models of basic components
- Understand their capabilities and limitations and make decision regarding their best utilization in specific situation.

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: (For Laboratory Examination – Minimum of 10 experiments)
1. Forward & Reverse Bias Characteristics of PN Junction Diode
2. Zener diode characteristics
3. Zener voltage Regulator.
4. Half Wave Rectifier
5. Half Wave Rectifier with filters.
6. Full Wave Rectifier
7. Full Wave Rectifier with filters.
8. Input & Output Characteristics of Transistor in CB Configuration.
9. Input & Output Characteristics of Transistor in CE Configuration and
10. h-parameter calculations from CE characteristics
11. FET characteristics.
12. Design of self bias circuit

PART C: Equipment required for Laboratories:
1. Regulated Power supplies (RPS) -0-30 V
2. CRO's
3. Function Generators -0-1 MHz.
4. Multimeters

5. Ammeters (Analog or Digital)
6. Voltmeters (Analog or Digital)
7. Electronic Components -Resistors, Capacitors, BJTs,

Course Outcomes:
This laboratory session provides learning opportunities that should enable the students.

- To understand the use of RPS & CRO & different meters.
- Explore the operation of different electronic components.
- Able to understand working principle of electronic circuits.
- Able to rig up and test small electronic circuits.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(A9502)PROBLEM SOLVING & COMPUTER PROGRAMMING LAB

I Year I-Sem: ECE & CSE **L/T/P/C**
II-Sem: EEE **0/ 0/3/2**

Objectives:

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

Syllabus Content

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

iv. Multiplying two compatible matrices to produce a result matrix.

9. Write a C program that uses functions to perform the following operations:
   i. To insert a sub-string in to a given main string from a given position.
   ii. To delete n Characters from a given position in a given string.
   iii. Write a C program to determine if the given string is a palindrome or not.

10.a Write a C program using pointer to create a two dimensional matrix, to input values in to the matrix and to display the matrix and its transpose. Free the memory properly.

10.b Write a C program to demonstrate calling of a function (like add,subtract,multiply) using a function pointer.

11.a Write a C program that displays the position or index in the string S where the string T begins, or – 1 if S doesn't contain T.

11.b Write a C program to count the lines, words and characters in a given text.

12. Write a menu driven C program that uses functions to perform the following operations on complex numbers stored in a structure:
   i. Reading a complex number
   ii. Writing a complex number
   iii. Addition of two complex numbers
   iv. Multiplication of two complex numbers

13.a Write a C program which copies one text file to another text file and verify the correctness.

13.b Write a C program which copies one binary file to another binary file and verify the correctness.

13.c Write a command-line C program to reverse the first n characters in a file. (Note: The file name and n are specified on the command line.)

14.a Write a C program to display the contents of a file.

14.b Write a C program to produce reverse of the content of a text 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
   v. Display all records
   vi. 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)

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.
6. *Programming in C – A Complete Introduction To The C Programming Language*, Stephen G. Kochan 3rd Ed., Sams Publishing, 2005.

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: 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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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(A9003) MATHEMATICS-III

II Year B.Tech. EEE I-Sem **L T P C**
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Pre-Requisites:
- Mathematics-I
- Mathematics -II

Course Objective:
- 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 conditions, 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, Laurent series. 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:

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

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(A9205) ELECTROMAGNETIC FIELDS

II Year B.Tech. EEE I-Sem **L T P C**
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Pre-Requisites:
- Engineering Physics
- Electrical Circuits-I & II

Course Objectives:
- The objective of this course is to introduce the concepts of electric field and magnetic fields and their applications.
- Utilized in the development of the theory for power transmission lines and electrical machines.

UNIT-I: Electrostatics:
Types of Co-ordinate systems: Rectangular, Cylindrical, Spherical system. Electrostatic Fields – Coulomb's Law – Electric Field Intensity (EFI) – EFI due to a line and a surface charge – Work done in moving a point charge in an electrostatic field – Electric Potential – Properties of potential function – Potential gradient – Guass's law – Application of Guass's Law – Maxwell's first law, div (D) = ρv – Laplace's and Poison's equations – Solution of Laplace's equation in one variable. Electric dipole – Dipole moment – potential and EFI due to an electric dipole – Torque on an Electric dipole in an electric field.

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

UNIT-III: Magneto Statics:
Static magnetic fields – Biot-Savart's law – Magnetic field intensity (MFI) – MFI due to a straight current carrying filament – MFI due to circular, square and solenoid current carrying wire – Relation between magnetic flux, magnetic flux density and MFI – Maxwell's second Equation, div(B)=0,

Ampere's Law & Applications:
Ampere's circuital law and its applications viz. MFI due to an infinite sheet of current and a long current carrying filament – Point form of Ampere's circuital law – Maxwell's third equation, Curl (H)=Jc.

UNIT-IV: Force in Magnetic fields and Magnetic Potential:
Magnetic force - Moving charges in a Magnetic field – Lorentz force equation – force on a current element in a magnetic field – Force on a straight and a long current carrying conductor in a magnetic field – Force between two straight long and parallel current carrying conductors – Magnetic dipole and dipole moment – a differential current loop as a magnetic

dipole – Torque on a current loop placed in a magnetic field - Scalar magnetic potential and its limitations – vector magnetic potential and its properties –vector Poisson's equations - Self and Mutual inductance – Neumann's formulae – determination of self-inductance of a solenoid and toroid - mutual inductance between a straight long wire and a square loop wire in the same plane – energy stored and density in a magnetic field. Introduction to permanent magnets, their characteristics and applications.

UNIT-V: Time Varying Fields:

Time varying fields – Faraday's laws of electromagnetic induction – Its integral and point forms – Maxwell's fourth equation, Curl (E)= $-\partial B/\partial t$ – Statically and Dynamically induced EMFs – Simple problems - Modification of Maxwell's equations for time varying fields – Displacement current and Displacement current density – Power in EM Fields – Poynting Vector and Poynting Theorem.

Text Books:

1. "Engineering Electromagnetic" by William H. Hayt & John. A. Buck, Mc. Graw-Hill Companies, 7th Editon.2009.
2. "Electromagnetic Fields" by Matthew.N.O.Sadiku, Oxford Publications

Reference Books:

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

Course Outcomes:

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

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

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(A9206) ELECTRICAL CIRCUITS -II

II Year B.Tech. EEE I-Sem

L	T	P	C
4	0	0	4

Pre-Requisites:

- Electrical Circuits –I

Course Objective:

- This course introduces the basic concepts of circuit analysis which is the foundation for all subjects of the Electrical Engineering discipline.
- The emphasis of this course is laid on the basic analysis of circuits which includes network topology, three phase circuits, transient analysis, Network Parameters, Two port network parameters, filters and Fourier analysis of A.C. Circuits.

UNIT-I: Network topology

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

UNIT-II: Three Phase Circuits:

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

UNIT-III: Transient Analysis:

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

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

UNIT- IV: Network functions and Network Parameters:

Network functions driving point and transfer impedance function networks- poles and zeros – necessary conditions for driving point function and for transfer function

Two port network parameters – Z, Y, ABCD and hybrid parameters and their relations– 2-port network parameters using transformed variables.

UNIT-V: Filters and Fourier analysis of A.C. Circuits:

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

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

Text Books:

1. Engineering circuit analysis – by William Hayt and Jack E. Kemmerly, Mc Graw Hill Company, 6th edition.
2. Electrical Circuits by David .A.Bell Oxford University Press, 7th Edition.
3. Networks and systems by D.Roy Chowdary, New age international publishers
4. Electric Circuits by A. Chakrabarthy, Dhanipat Rai & Sons.

Reference Books:

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

Course Outcomes:

After going through this course

- The student gets a thorough knowledge on network topology three-phase systems of electrical circuits, transient analysis of AC and DC networks, Laplace transforms, different types of network functions, two functions, two –port network parameters
- Operation and design of various filter circuits, Fourier transforms and analysis of AC circuit through Fourier,
- He/she can be able to apply the above conceptual things to real-world electrical and electronics problems and applications.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(A9207) ELECTRICAL MACHINES - I

II Year B.Tech. EEE I-Sem

L	T	P	C
4	0	0	4

Pre-Requisites:
- Electrical Circuits –I & II
- Electromagnetic Fields

Course Objective:
- Electrical machines course is one of the important courses of the Electrical discipline.
- In this course the different types of DC generators and Motors, which are widely used in industry are covered and their performance aspects will be studied.

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

UNIT – II D.C. Generators Construction & Operation:
D.C. Generators – Principle of operation – Action of commutator – constructional features – armature windings – lap and wave windings – simplex and multiplex windings – use of laminated armature – E.M.F Equation –Problems.
Armature reaction: Cross magnetizing and de-magnetizing AT/pole – compensating winding – commutation – reactance voltage – methods of improving commutation.

UNIT – III Types of D.C Generators & Characteristics:

Methods of Excitation – separately excited and self-excited generators – build-up of E.M.F - critical field resistance and critical speed - causes for failure to self-excite and remedial measures. Load characteristics of shunt, series and compound generators. Applications, Problems with Practical Ratings.
Parallel operation of D.C series generators - Use of equalizer bar and cross connection of field windings - Load sharing.
UNIT – IV D.C Motors Operation & Speed control:
D.C Motors – Principle of operation – Back E.M.F. - Torque equation – characteristics and application of shunt, series and compound motors – Armature reaction and commutation. Applications, Problems with Practical Ratings.
Speed control of D.C. Motors: Armature voltage and field flux control methods. Motor starters (3 point and 4 point starters).

UNIT – V Testing of D.C. machines:
Losses – Constant & Variable losses – calculation of efficiency – condition for maximum efficiency.
Methods of Testing – direct, indirect and regenerative testing – Brake test – Swinburne's test Hopkinson's test – Field's test-separation of stray losses in a D.C. motor test.

Text Books:

1. Electrical Machines – P.S. Bimbra., Khanna Publishers
2. Electric Machines by I.J. Nagrath & D.P. Kothari, Tata Mc Graw – Hill Publishers, 3rd edition, 2004.

Reference Books:

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

Course Outcomes:

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

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

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(A9506) DATA STRUCTURES THROUGH C++

II Year B.Tech. EEE I-Sem

L	T	P	C
3	0	0	3

Pre-Requisites: C-Programming

Course 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 behavior 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-1

C++ Class 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 Reallocation (new and delete), exception handling. Function Over Loading, Operator Overloading, 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-2

Algorithms, performance analysis- time complexity and space complexity. Review of basic data structures- The list ADT, Stack ADT, Queue ADT, Implementation using template classes in C++. Dictionaries, linear list representation, skip list representation, 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-3

Priority Queues _ Definition, ADT, Realizing a Priority Queue using Heaps, Definition, insertion, Deletion, External Sorting- Model for external sorting, Multiway merge, Polyphase merge.

UNIT-4

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, Comparison of Search Trees Graphs: Basic terminology, representations of graphs, graph search methods DFS, BFS.

UNIT-5

Text Processing : Pattern matching algorithms-Brute force, the Boyer _Moore algorithm, the Knuth-Morris-Pratt algorithm, Standard Tries, Compressed Tries, Suffix tries.

Text Books:

1. *Data Structures: A Pseudocode Approach with C++*, Richard F Gilberg, Behrouz A Forouzan, Cengage Learning
2. Data structures, Algorithms and Applications in C++, S.Sahni, University Press (India) Pvt.Ltd, 2nd edition, Universities Press Orient Longman Pvt. Ltd.
3. Data structures and Algorithms in C++, Michael T.Goodrich, R.Tamassia and Mount, Wiley student edition, John Wiley and Sons.

References Books:

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.

Course Outcomes:

- A strong foundation in core Computer Science and Engineering, both theoretical and applied concepts.
- An ability to apply knowledge of mathematics, science, and engineering to real-world problems.
- Ability to model, understands, and develops complex software for System Software as well as Application Software.
- An ability to communicate effectively, both in writing and oral.
- Recognition of the need for, and an ability to engage in life-long learning.
- Understanding of fundamental concepts of abstract data types and general standard data structures.
- Ability to design linear data structures stacks, queues and linked lists.
- Ability to design nonlinear data structures, trees and graphs, and to implement their operations.
- Ability to implement different searching and sorting techniques.
- Ability to apply different searching and sorting techniques for real world problems.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(A9208) ELECTRICAL CIRCUITS LAB

II Year B.Tech. EEE I-Sem

L	T	P	C
0	0	3	2

Prerequisites: Electrical Circuits-I, Electrical Circuits-II

Course Objectives:

- This course introduces the basic concept of circuits analysis which is foundation for all subjects of Electrical engineering.
- This course is laid on the basic analysis of circuits which includes single phase and 3 –phase circuits.
- Analyse the resonance of series and parallel circuits.

List of Experiments

1. Verification of Kirchhoff's laws and Tellegen's Theorem
2. Verification of Thevenin's, Norton's and Maximum Power Transfer Theorems.
3. Verification of Superposition and Reciprocity Theorems.
4. Locus Diagrams of RL and RC Series Circuits.
5. Series and Parallel Resonance.
6. Determination of Self, Mutual Inductances and Coefficient of coupling.
7. Determination of Open circuit, Short circuit and ABCD parameters of two port networks.
8. Measurement of active and reactive powers of a 3-phase network using two Wattmeters.
9. Verification of Compensation and Millman's Theorems.
10. Verification of RMS value of complex wave.
11. Relation between voltage and current in star and delta networks.
12. Verification of Time response of first order (RC,RL) and Second order (RLC) networks for periodic non – sinusoidal inputs – Time constant and Steady state error determination.

Course outcomes:

- Verify network theorems
- Determine Z, Y and ABCD parameters for a given two port network.
- Evaluate the time response and frequency response characteristics of RLC series circuit and their resonance conditions.
- Determine active and reactive power of 3-phase networks.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(A9015) COMPUTATIONAL MATHEMATICS LAB

II Year B.Tech. EEE I-Sem

L	T	P	C
0	0	3	2

Prerequisites: (A9004) Computational Mathematics

Course Objective:

The main aim of the computational mathematics to examine the constructive abstract methods of mathematics when illustrated with suitable numerical techniques. Computational 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.

Interpolation:

Programming Tasks:

1. A) Write a C program to determine y for a given x, if two arrays of x and y of same size are given.(using Newton's interpolation both forward and backward)
   B) Write a C program to determine y for a given x, if two arrays of x and y of same size are given.(using Lagrange 's interpolation)
   (Selection criteria of the interpolation formula are important.)

Curve fitting:

Programming Tasks:

2. A) Write a C program to find a line of best fit from the given two arrays of x and y of same size.
   B) Write a C program to find a curve of the form $y = Ae^{Bx}$ from the given two arrays of x and y of same size.
   C) Write a C program to find a curve of the form $y = Ax^{B}$ from the given two arrays of x and y of same size.
   D) Write a C program to find a curve of the form $y = Ax^2 + Bx + C$ from the given two arrays of x and y of same size.

Solution of Algebraic and Transcendental Equations

Programming Tasks:

3. A) Write a C program to find the root of a given equation using bisection method.
   (Write this program such that the initial values given to the system are not usable, then the system should ask us to give new set of initial values)
   B) Write a C program to find the root of a given equation using method of false position (regula-falsi position)
   C) Write a C program to find the root of a given equation using iteration method.
   D) Write a C program to find the root of a given equation using Newton Raphson method

Numerical Differentiation, Integration, and Numerical solutions of First order differential equations:
Programming Tasks:

4. A) Write a C program to evaluate definite integral using trapezoidal rule, Simpson's $1/3^{rd}$ rule and $3/8^{th}$ rule.
   B) Write a C program to solve a given differential equation Euler's and modified Euler's method
   C) Write a C program to solve a given differential equation using Runge-Kutta method.

Text Books:

1) Introductory methods of numerical analysis by SS Sastry
2) Numerical and statistical methods with programming in C by Sujatha Sinha and Subhabrada Dinda, Scitec publishers

References:

1) Advanced engineering mathematics by Alan Jeffery
2) Applied numerical methods using Matlab by Rao.V. Dukkipati, New Age Publishers
3) Numerical methods in science and engineering –A practical approach by S. Rajasekharan, S. Chand Publications

Course Outcomes:

By studying Numerical Techniques students are able to solve transcendental equations and solving higher order difference and integrations and also to write the programmes on numerical techniques and matrices which are very useful for the Engineering students in real world applications and in Industrial research.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(A9507) DATA STRUCTURES THROUGH C++ LAB

II Year B.Tech. EEE I-Sem

L	T	P	C
0	0	3	2

Pre Requisites: (A9502)Problems Solving and Computer Programming Lab

Course 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

List of Programs

1. Write a C++ program to implement all the functions of a dictionary ADT.
2. Write a C++ program for skip lists.
3. Write a C++ program for hashing with quadratic programming.
4. C++ programs using class templates to implement the following using an array.
   a) Stack ADT b) Queue ADT
5. Write C++ programs using class templates to implement the following using a singly linked list.
   a) Stack ADT b) Queue ADT
6. Write C++ programs using class templates to implement the deque (double ended queue) ADT using a doubly linked list and an array.
7. Write C++ programs, using class templates, that use non-recursive functions to traverse the given binary tree in
   a) preorder b) inorder and c) postorder.
8. Write C++ programs, using class templates, that use recursive functions to traverse the given binary tree in
   a) preorder b) inorder and c) postorder.
9. Write a C++ program using class templates to perform the following operations:
   a) Insert an element into a binary search tree.
   b) Delete an element from a binary search tree.
   c) Search for a key element in a binary search tree.
10. Write C++ programs using class templates for the implementation of bfs and dfs for a given graph.
11. Write C++ programs using class templates for implementing the following sorting methods:
    a) Merge sort b) Heap sort

12. Write a C++ program using class templates to perform the following operations
    a) Insertion into a B-tree b) Deletion from a B-tree
13. Write a C++ program using class templates to perform the following operations
    a) Insertion into an AVL-tree b) Deletion from an AVL-tree
14. Write a C++ program using class templates to implement Kruskal_s algorithm to generate a minimum cost spanning tree.
15. Write a C++ program using class templates to implement Prim_s algorithm to generate a minimum cost spanning tree.
16. Write a C++ to implement Knuth-Morris-Pratt pattern matching algorithm.

Text Books:

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

Course Outcomes:

- A strong foundation in core Computer Science and Engineering, both theoretical and applied concepts.
- An ability to apply knowledge of mathematics, science, and engineering to real-world problems.
- Ability to model, understands, and develops complex software for System Software as Well as Application Software.
- An ability to communicate effectively, both in writing and oral.
- Recognition of the need for, and an ability to engage in life-long learning.
- Understanding of fundamental concepts of abstract data types and general standard data structures.
- Ability to design linear data structures stacks, queues and linked lists.
- Ability to design nonlinear data structures, trees and graphs, and to implement their operations.
- Ability to implement different searching and sorting techniques.
- Ability to apply different searching and sorting techniques for real world problems.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(A9020) PERSONALITY DEVELOPMENT AND SOFT SKILLS

II Year B.Tech. EEE II-Sem

L	T	P	C
2	0	0	0

Prerequisites: None

Course Description

The course will enable the students to understand their personality, to know their preferred learning style, grasp their locus of control, improve communication and plunge into their own skills.

Course Objectives

- To understand one's own personality and enhances successful living.
- To enable the students to get an idea on the physical, emotional, social, cognitive and moral, locus of control and helps them to be objective in life.
- Identify the individual's skill and have work –life balance.
- Communication and its importance will be integrated in the students.
- To integrate classroom learning and real life observation and application.

UNIT – I: Introduction to personality development and soft skills.

Life/soft skills introduction, Identifying individual's skills, How to work on your skills and barriers one face, Self Awareness, Self concepts, Barriers in self awareness, Guidelines to overcome barriers of Self awareness.

UNIT – II: Communication Skills

Communication Skills, Modes/ Types of communication , Your preferred style of communication , Strengths & weakness in your style of communication, Effective communication, Ineffective communication, Ingredients in communication - Vocabulary - Assertiveness - Expressing gently and clearly - True statements- Set up appropriate expectations - Know your circles - Clarify and reflect.
Working on the barriers of communication -Vague content - Low self esteem- High self esteem - Preconceived ideas - Judgmental attitudes - In appropriate analysis and interpretation of others - Closed cognition skills.

UNIT - III: Dynamics of personality development

Critical thinking, Team Dynamics, Work ethics, Time management, Stress management.

UNIT– IV: Coping Skills

Introduction- Coping with Failure, Coping with Depression, Barriers in overcoming failure and Guidelines for success.

UNIT – V: Procrastination

Introduction to Procrastination – Reasons - Consequences of procrastination - How to deal with procrastination - Applications of all the above skills.

Text Books / References

1. Barun K Mithra: Personality Development and soft skills. Oxford Higher education.
2. Gopala Swamy Ramesh & Mahadevan Ramesh : The Ace of Soft skills – Attutide, communication, etiquette for success. Pearson Publications.
3. K.G. Ramawat & Dr. k. Alex : Soft Skills- know yourself and know the world. S. Chand and company Pvt Ltd.

Course Outcomes

The course will enable the students to understand their personality, to know their preferred learning style, grasp their locus of control, improve their standard of communication and plunge into their own skills.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(A9211) POWER SYSTEMS-I

II Year B.Tech. EEE II-Sem

L	T	P	C
3	1	0	3

Pre-Requisites:

- Electrical Circuits
- Electromagnetic Fields
- Electrical Machines

Course Objective:

- Electrical Power plays significant role in day to day life of entire mankind.
- This course concerns the generation and distribution of power along with the economic aspects.

UNIT-1 Thermal Power Stations:

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

Gas and Nuclear Power Stations:

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

Gas Power Stations: Principle of Operation and Components- Numerical Problems.

UNIT –II Hydroelectric Power Stations:

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

UNIT-III D.C. Distribution Systems:

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

A.C. Distribution Systems:

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

UNIT-IV Substations:

Classification of substations: **Air insulated substations** - Indoor & Outdoor substations: Substations layout showing the location of all the substation equipment.

Bus bar arrangements in the Sub-Stations: Simple arrangements like single bus bar, sectionalized single bus bar, main and transfer bus bar system with relevant diagrams.

Gas insulated substations (GIS) – Advantages of Gas insulated substations, different types of gas insulated substations, single line diagram of gas insulated substations, bus bar, construction aspects of GIS, Installation and maintenance of GIS, Comparison of Air insulated substations and Gas insulated substations.

UNIT-V Economic Aspects of Power Generation:
Load curve, load duration and integrated load duration curves-load, demand, diversity, capacity, utilization and plant use factors- Numerical Problems.

Tariff Methods:
Costs of Generation and their division into Fixed, Semi-fixed and Running Costs. Desirable Characteristics of a Tariff Method.-Tariff Methods: Flat Rate, Block-Rate, two-part, three – part, and power factor tariff methods and Numerical Problems

Text Books

1. Electrical Power Systems by C.L.Wadhawa New age International (P) Limited, Publishers 1997.
2. Elements of Electrical Power Station Design, 3rd Edition, Wheeler. Pub.1998- M.V.Deshpande.
3. Power System Engineering- by R.K.Rajput Laxmi Publications(P) Limited, New Delhi 2006.

Reference Books

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

Course Outcomes:

- After going through this course the student gets a thorough knowledge on the thermal, nuclear, gas and Hydal power plants operation,
- AC and DC distribution operation and their calculation, AIR insulated and GAS insulated indoor/outdoor substations operation.
- Voltage control and power factor improvement techniques, economics aspects of power generation and different types of tariff methods.
- With which he/she can be able to apply the above conceptual things to real-world electrical and electronics problems and applications.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(A9212)ELECTRICAL MACHINES – II

II Year B. Tech. EEE II-Sem

L	T	P	C
4	0	0	4

Pre-Requisites:
- Electrical Circuits- I& II
- Electromagnetic Fields
- Electrical Machines-I

Course Objectives:
- As an extension of Electrical Machines-I course this subject facilitates to study the performance of Transformers and Induction motors which are the major part of industrial drives and agricultural pump sets.

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

UNIT-II: Testing of Single Phase Transformer :
OC and SC tests- Sumpner's test- predetermination of efficiency and regulation – Separation of losses test. Parallel operation with equal and unequal voltage ratios.

UNIT-III: Auto &Polyphase Transformers:
Autotransformers –equivalent circuit – comparison with two winding transformers.
Polyphase transformers –Polyphase connections- Y/Y, Y/Δ, Δ/Y, Δ/Δ, and open Δ. Third harmonics in phase voltages –three winding transformers –teriary windings- determination of Zp, Zs, and Zt transients in switching –off load and on load tap changing, Scott connection.

UNIT-IV: Polyphase Induction Motors:
Polyphase induction motors-construction details of cage and wound rotor machines-production of a rotating magnetic field - principle of operation - rotor EMF and rotor frequency - rotor reactance, rotor current and PF at standstill and during operation.

Characteristics of Induction Motors:
Rotor power input, rotor copper loss and mechanical power developed and their inter relation-torque equation-deduction from torque equation - expressions for maximum torque and starting torque - torque slip characteristic - equivalent circuit - Phasor diagram - crawling and cogging.

UNIT-V: Circle Diagram & Speed Control of Induction Motors:
No-load Test and Blocked rotor test –Predetermination of performance-Methods of starting and starting current and Torque calculations.
Speed Control Methods:

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

Text Books:

1. Electrical machines-PS Bhimbra, Khanna Publishers.
2. Electric Machines –by I.J.Nagrath & D.P.Kothari, Tata McGraw Hill, 7th Edition.2009
3. Performance and Design of AC Machines-M.G. Say. BPB Publishers.

Reference Books:

1. Electric machinery - A.E. Fitzgerald, C.Kingsley and S.Umans, Mc Graw Hill Companies, 5th edition
2. Theory of Alternating Current Machinery- by Langsdorf, Tata McGraw-Hill Companies, 2nd edition.
3. Electrical Machines – M.V Deshpande, Wheeler Publishing
4. Electrical Machines – J.B. Gupta, S.K. Khataria & Son's Publications

Course Outcomes:

- After going through this course the student gets a thorough knowledge on, construction operation characteristics and testing of different types of transformers
- Construction operation characteristics testing (concept of circle diagram) and speed control method of poly-phase induction motor
- With which he/she can be able to apply the above conceptual things to real-world electrical and electronics problems and applications

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(A9213) ELECTRICAL MEASUREMENTS AND INSTRUMENTATION

II Year B.Tech. EEE II-Sem

L	T	P	C
4	0	0	4

Pre-Requisites:

- Electrical Circuits
- Electronic Devices and Circuits
- Digital Integrated Circuits
- Electromagnetic Fields
- Electrical Machines

Course Objective:

- Electrical measurements course introduces the basic principles of all measuring instruments.
- It also deals with the measurement of RLC parameters voltage, current Power factor, power, energy and magnetic measurements.

UNIT-I: INTRODUCTION TO MEASURING INSTRUMENTS:

Classification – deflecting, control and damping torques – Ammeters and Voltmeters – PMMC, moving iron type instruments – expression for the deflecting torque and control torque – Errors and compensations, extension of range using shunts and series resistance. Electrostatic Voltmeters-electrometer type and attracted disc type – Extension of range of E.S. Voltmeters.

UNIT-II: POTENTIOMETERS & INSTRUMENT TRANSFORMERS:

Principle and operation of D.C. Crompton's potentiometer – standardization – Measurement of unknown resistance, current, voltage. A.C. Potentiometers: polar and coordinate type's standardization – applications. CT and PT – Ratio and phase angle errors

UNIT-III: MEASUREMENT OF POWER & ENERGY:

Single phase dynamometer wattmeter, LPF and UPF, Double element and three element dynamometer wattmeter, expression for deflecting and control torques – Extension of range of wattmeter using instrument transformers – Measurement of active and reactive powers in balanced and unbalanced systems.
Single phase induction type energy meter – driving and braking torques – errors and compensations – testing by phantom loading using R.S.S. meter. Three phase energy meter – tri-vector meter, maximum demand meters.

UNIT-IV: D.C & A.C BRIDGES:

Method of measuring low, medium and high resistance – sensitivity of Wheat-stone's bridge – Carey Foster's bridge, Kelvin's double bridge for measuring low resistance, measurement of high resistance – loss of charge method.

Measurement of inductance- Factor - Maxwell's bridge, Hay's bridge, Anderson's bridge, Owen's bridge. Measurement of capacitance and loss angle - Desauty Bridge. Wien's bridge – Schering Bridge.

UNIT-V: TRANSDUCERS:

Definition of transducers, Classification of transducers, Advantages of Electrical transducers, Characteristics and choice of transducers; Principle operation of LVDT and capacitor transducers; LVDT Applications, Strain gauge and its principle of operation, gauge factor, Thermistors, Thermocouples, Piezo electric transducers, photovoltaic, photo conductive cells, photo diodes.

MEASUREMENT OF NON-ELECTRICAL QUANTITIES:

Measurement of strain, Gauge sensitivity, Displacement, Velocity, Angular Velocity, Acceleration, Force, Torque, Temperature, Pressure, Vacuum, Flow and Liquid level.

Text Books:

1. Electrical & Electronic Measurement & Instruments, A.K.Sawhney Dhanpat Rai & Co. Publications.
2. Electrical and Electronic Measurements and Instrumentation, R. K. Rajput, S. Chand & Company Ltd.

Reference Books:

1. Electrical and Electronic Measurements, G. K. Banerjee, PHI Learning Pvt. Ltd.
2. Electrical Measurements and Measuring Instruments, Golding and Widdis, Reem Publications.
3. Electrical Measurements, Buckingham and Price, Prentice – Hall
4. Electrical Measurements: Fundamentals, Concepts, Applications, Reissland, M.U, New Age International (P) Limited, Publishers.
5. Electrical Measurements and measuring Instruments, E.W. Golding and F.C. Widdis, fifth Edition, Wheeler Publishing.

Course Outcomes:

After going through this student gets knowledge on:

- Different types of measuring instruments their construction operation and characteristics
- Resistance voltage current measurements through potentiometers, voltage current measurements through instruments transformers.
- Power and energy measurements through watt and energy meters, resistance measurements through DC bridges, capacitance and inductance measurements through AC bridges, different types of transducers.
- Measurement of frequency and phase through CRO, range extension of measuring instruments
  and different types of errors & their reduction methods in measuring instruments.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(A9359)THERMAL AND HYDRO PRIME MOVERS

II Year B.Tech. EEE II-Sem

L	T	P	C
3	0	0	3

Pre-Requisites:
- Power Systems
- Electrical Machines

Course Objectives:
The objectives of the course are:
- To make the students understand the various types of prime movers which can be connected to generators for power production
- To impart the knowledge of various types of pumps.

UNIT-I
Steam power plants
Boilers-working principle of Benson boiler and Lamont boilers.
Steam Turbines: Schematic layout of steam power plant, Classification of Steam Turbines-Impulse Turbine and Reaction Turbine, Compounding in Turbines
Condensers- Working principle of jet and surface condensers.

UNIT-II
Gas Turbine: Introduction, applications, types of gas turbines, working principle of open and closed cycle gas turbine. Methods to improve thermal efficiency of gas turbine, gas turbine fuels, starting of plant, comparison with diesel and steam power plants.

UNIT-III
Diesel Power Plant: Introduction, diesel engine working principle, diesel fuels, diesel electric plant main components, super charging.

UNIT-IV
Hydraulic Turbines: Introduction, Classification of hydraulic turbines, working principles of Pelton wheel, Francis turbine, Kaplan Turbine. Governing of Impulse & Reaction Turbine

UNIT-V
Pumps:
Centrifugal pumps-types, working principle, Multi stage centrifugal pumps.
Reciprocating pumps-types, working principle.

TEXT BOOKS:

1. Thermal Engineering-by RK Rajput, Lakshmi Pubilcations
2. Fluid Mechanics & Hydraulic Machines – by Modi & Seth, PHI Publications.

REFERENCE BOOKS:

1. Gas Turbines – by V Ganesan, Tata McGraw-Hill Companies
2. Internal Combustion Engines – by V Ganesan, Tata McGraw-Hill Companies.
3. PK Nag – Power Plant Engineering, TMH publication
4. Gas turbine theory-HIH Sarvanmuttoo,H Cohen,GFC Rogers, Pearson Education India.

Course Outcomes:

Upon completion of this course the student will be able to:

- Describe the basic components of steam power plants and working principles of different types of steam turbines
- Explain the working principle of different types of gas turbines
- Identify the main components of diesel power plant and explain the working principle of diesel engines
- Discuss the working principle of different types of hydraulic turbines
- Illustrate the working principle of centrifugal and reciprocating pumps.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(A9407) SWITCHING THEORY AND LOGIC DESIGN

II Year B.Tech. EEE II-Sem

L	T	P	C
3	1	0	3

Course Objective: This Course provided in-depth knowledge of switching theory and the design techniques of digital circuits, which is the basis for design of any digital circuit. The main objectives are.

- To learn basic tools for the design of digital circuits and fundamental concepts used in the design of digital system.
- To understand common forms of number representation in digital electronic circuits and to be able to convert between different representations.
- To implement simple logical operations using combinational logic circuits.
- To design combinational logic circuits, sequential logic circuits.
- To impart to student the concepts of sequential circuits, enabling them to analyze sequential systems in terms of state machines.
- To implement synchronous state machines using flip-flops.

UNIT-I:

Number System and Boolean Algebra and Switching Functions:

Review of number systems, Complements of Numbers, Codes- Binary Codes, Binary Coded Decimal Code and its Properties, Unit Distance Codes, Error Detecting and Correcting Codes.

Boolean Algebra: Basic Theorems and Properties, Switching Functions, Canonical and Standard Form, Algebraic Simplification of Digital Logic Gates, Properties of XOR Gates, Universal Gates, Multilevel NAND/NOR realizations.

UNIT-II:

Minimization and Design of Combinational Circuits:

Introduction, The Minimization of switching function using theorem, The Karnaugh Map Method-Up to Five Variable Maps, Don't Care Map Entries, Tabular Method, Design of Combinational Logic: Adders, Subtractors, comparators, Multiplexers, Demultiplexers, Decoders, Encoders and Code converters, Hazards and Hazard Free Relations.

UNIT-III:

Sequential Machines Fundamentals and Applications:

Introduction: Basic Architectural Distinctions between Combinational and Sequential circuits, The Binary Cell, Fundamentals of Sequential Machine Operation, Latches, Flip Flops: SR, JK, Race Around Condition in JK, JK Master Slave, D and T Type Flip Flops, Excitation Table of all Flip Flops, Design of a Clocked Flip-Flop, Timing and Triggering Consideration, Clock Skew, Conversion from one type of Flip-Flop to another.

Registers and Counters: Shift Registers, Data Transmission in Shift Registers, Operation of Shift Registers, Shift Register Configuration, Bidirectional Shift Registers, Applications of Shift Registers, Design and Operation of Ring and Twisted Ring Counter, Operation Of Asynchronous And Synchronous Counters.

UNIT-IV:

Sequential Circuits-I:

Introduction, State Diagram, Analysis of Synchronous Sequential Circuits, Approaches to the Design of Synchronous Sequential Finite State Machines, Synthesis of Synchronous Sequential Circuits, Serial Binary Adder, Sequence Detector, Parity-bit Generator, Design of Asynchronous Counters, Design of Synchronous Modulo N –Counters.

UNIT-V:

Sequential Circuits-II:

Finite state machine-capabilities and limitations, Mealy and Moore models-minimization of completely specified and incompletely specified sequential machines, Partition techniques and Merger chart methods-concept of minimal cover table.

Algorithmic State Machines: Salient features of the ASM chart-Simple examples-System design using data path and control subsystems-control implementations-examples of Weighing machine and Binary multiplier.

TEXT BOOKS:

1. Switching and Finite Automata Theory- Zvi Kohavi & Niraj K. Jha, 3rdEdition, Cambridge.
2. Switching Theory and Logic Design – A Anand Kumar, PHI,2013.

REFERENCE BOOKS:

1. Digital Design- Morris Mano, PHI, 3rd Edition.
2. Introduction to Switching Theory and Logic Design – Fredriac J. Hill, Gerald R. Peterson, 3rd Ed,John Wiley & Sons Inc.
3. Digital Fundamentals – A Systems Approach – Thomas L. Floyd, Pearson, 2013.
4. Digital Logic Design - Ye Brian and HoldsWorth, Elsevier
5. Fundamentals of Logic Design- Charles H. Roth, Cengage LEanring, 5th, Edition, 2004.
6. DigitalLogic Applications and Design- John M. Yarbrough, Thomson Publications, 2006.
7. Digital Logic and State Machine Design – Comer, 3rd, Oxford, 2013.

OUTCOMES:

Upon completion of the course students should posses the following skills:

- Be able to manipulate numeric information in different forms, e.g. different bases, signed integers, various codes such as ASCII, gray, and BCD.
- Be able to manipulate simple Boolean expressions using the theorems and postulates of Boolean algebra and to minimize combinational functions.
- Be able to design and analyze small combinational circuits and to use standard combinational functions/ building blocks to build larger more complex circuits.
- Be able to design and analyze small sequential circuits and devices and to use standard sequential functions/building blocks to build larger more complex circuits.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(A9447) PULSE DIGITAL & LINEAR INTEGRATED CIRCUITS

II Year B.Tech. EEE II-Sem | **L T P C**
3 0 0 3

Pre-Requisites: None

Course Objectives:

- To explain the complete response of R-C and R-L-C transients circuits.
- To explain clippers, clampers, switching characteristics of transistors and sampling gates.
- To introduce the basic building blocking of linear integrated circuits.
- To teach the linear and non-linear application of operational amplifiers.
- To introduce the theory and applications of analog multipliers and PLL.
- To teach the theory of ADC and DAC

UNIT I

LINEAR WAVE SHAPING: High pass, low pass RC circuits, their response for sinusoidal, step, pulse. High pass RC network as differentiator and Low Pass RC network as integrator, , RL and RLC circuits and their response for step input.

UNIT II

NON-LINEAR WAVE SHAPING: Diode clippers, Transistor clippers, clipping at two independent levels. Clamping operation, clamping circuit taking Source and Diode resistances into account, Clamping circuit theorem, practical clamping circuits, effect of diode characteristics on clamping voltage, synchronized clamping.

UNIT – III

Introduction to integrated circuits :Integrated circuit definition, classification, development of IC's OPAMP and Applications: Basic block diagram of OP-AMP, IC 741 introduction, pin diagram, ideal DC & AC characteristics, configurations (or) modes of operations, concepts of virtual ground. Basic op-amp applications, instrumentation amplifier, ac amplifier, Integrator, differentiator, electronic analog computation, comparator ,waveform generator's and active filter's

UNIT IV:

TIMERS & PHASELOCKED LOOPS Introduction to 555 timer, functional diagram, monostable and astable operations and applications, Schmitt Trigger. PLL – introduction, block schematic, principles and description of individual block of 565.

UNIT V:

D-A AND A-D CONVERTERS Introduction, basic DAC techniques, weighted resistor DAC, R-2R ladder DAC, inverted R-2R DAC, and IC 1408 DAC, Different types of ADCs – parallel comparator type ADC, counter type ADC, successive approximation ADC and dual slope ADC. DAC and ADC specifications.

Text Books:

1. Pulse, Digital and Switching Waveforms - J. Millman and H. Taub, McGraw-Hill, 1991.
2. Solid State Pulse circuits - David A. Bell, PHI, 4th Edn., 2002
3. Op-amps and linear ics – ramakanth A. Gayakwad, PHI, 2003.
4. Linear integrated circuits- D. Roy Chowdhury, New Age Inernational (p) let,

References:

1. Pulse and Digital Circuits – A. Anand Kumar, PHI, 2005.
2. Fundamentals of pulse and digital circuits-Ronald.J.Tocci,3 ed. ,2008
3. Op amps and linear intergratd circuits concepts and applications james M. Fiore, Cengage Learning/Jaico, 2009.
4. Operational amplifiers with linear integrated Circuits by K.Lal Kishore Pearson, 2009.

Course Outcomes:

- A thorough understanding of operational amplifiers with linear integrated circuits.
- Understanding of the different families of digital integrated circuits and their characteristics.
- Understand the applications of diode as integrator, differentiator, clippers, clampler circuits.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(A9214) ELECTRICAL MACHINES – I LAB

II Year B.Tech. EEE II-Sem

L	T	P	C
0	0	3	2

Prerequisites: Electrical Circuits I & II, Electro Magnetic Fields and Electrical Machines –I.

Course Objectives:

- To introduces concept of rotating machines and principle of the Electro mechanical energy conversion
- To understand functioning of different types of dc machines.
- To estimate losses and estimation of various dc machines.

List of Experiments

1. Magnetization characteristics of DC shunt generator. Determination of critical field resistance and critical speed.
2. Load test on DC shunt generator. Determination of characteristics.
3. Load test on DC series generator. Determination of characteristics.
4. Load test on DC compound generator. Determination of characteristics.
5. Hopkinson's test on DC shunt machines. Predetermination of efficiency.
6. Fields test on DC series machines. Determination of efficiency.
7. Swinburne's test on DC Shunt Machine. Predetermination of efficiencies.
8. Speed control of DC shunt motor.
9. Brake test on DC compound motor. Determination of performance curves.
10. Brake test on DC shunt motor. Determination of performance curves.
11. Separation of losses in DC shunt motor.

Course Outcomes:

- Select range of apparatus based on the ratings of DC Machines.
- Determine Characteristics of DC machines by conducting tests.
- Evaluate the efficiency of the machine by analyzing test results.
- Study speed control methods for dc machines
- Select range of apparatus based on the ratings of DC Machines

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(A9448) IC & PULSE DIGITAL CIRCUTS LAB

II Year B.Tech. EEE II-Sem

L	T	P	C
0	0	3	2

Prerequisites: Pulse Digital and Linear Integrated Circuits

Course Objects

- To design and construct the R-C circuits, clippers, clampers. To design and analyses of adder, subtractor using IC741.
- To understand the operations of differentiator and integrator using IC 741.
- To design and analyses of active filer.
- To construct and understand of the different multivibrator using IC 555.
- To construct and analyses different waveform generators IC741.
- To understand the operation of VCO using IC 566.

List of Experiments

1. Linear Wave Shaping
2. Non Linear Wave Shaping-Clippers, Clampers
3. OP AMP Applications – Adder, Subtractor, Comparators.
4. Integrator and Differentiator Circuits using IC 741.
5. Instrumentation Amplifier using op-Amp
6. Active Filter Applications – LPF, HPF (first order)
7. IC 741 Waveform Generators – Sine, Squarewave and Triangular waves.
8. IC 555 Timer – Monostable and Astable Multivibrator Circuits.
9. Schmitt Trigger Circuits – Using IC 741
10. PLL Using 1C 565
11. Design of VCO using IC 566
12. 4 bit DAC using OP AMP

Course Outcomes

- Understand the applications of diode as integrator, differentiator, clippers, clampler circuits.
- Student able to design circuits using operational amplifiers for various applications.
- Student able to understand the VCO & PLL circuits.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(A9019) GENDER SENSITIZATION
(MANDATORY ELECTIVE)

II Year B.Tech. II-Sem,

L	T	P	C
2	0	0	0

Pre-Requisites: None

Course Objectives:

- To develop students sensibility with regard to issue 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.

Unit – 1
Gender: Why Should We Study It?

Unit – 2
Socialization: Making Women, Making Men
2.1 Introduction
2.2 Preparing for womanhood
2.3 Growing up male
2.4 First lessons in caste
2.5 Different masculinities

Unit – 3
Housework: The Invisible Labour
3.1 "My mother does not work"
3.2 "Share the load"

Unit – 4
Missing Women: Sex Selection and Its consequences
4.1 Declining sex ratio
4.2 Demographic consequences

Unit – 5
Knowledge: Through the Lens of Gender
5.1 Point of view
5.2 Gender and the structure of knowledge
5.3 Further reading: Unacknowledged women artists of Telangana

Unit – 6
Sexual Harassment: Say No!
6.1 Sexual harassment, not eve-teasing
6.2 Coping with everyday harassment
6.3 Further reading: "Chupulu"

Unit – 7
Women' Work: Its Politics and Economics
7.1 Fact and fiction
7.2 Unrecognized and unaccounted work
7.3 Further reading: Wages and conditions of work

Unit – 8
Domestic Violence: Speaking Out
8.1 Is home a safe place?
8.2 When women unite [Film]
8.3 Rebuilding lives
8.4 Further reading: New forums for justice

Unit – 9
Whose History? Questions for Historians and Others
9.1 Reclaiming a past
9.2 Writing other histories
9.3 Further reading: Missing pages from modern Telangana history

Unit – 10
Gender Spectrum: Beyond the Binary
10.1 Two or many?
10.2 Struggles with discrimination

Unit – 11
Thinking about Sexual Violence
11.1 Blaming the victim
11.2 "I fought for my life…"
11.3 Further reading: The caste face of violence

Unit – 12
Just Relationships: Being Together as Equals
12.1 Mary Kom and Onler
12.2 Love and acid just do not mix
12.3 Love letters
12.4 Mothers and fathers
12.5 Further Reading: Rosa Parks – The braveheart

Unit – 13
Additional Reading: Our Bodies, Our Health

Course 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.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(A9215) POWER SYSTEMS-II

III Year B.Tech. EEE I-Sem

L	T	P	C
4	0	0	4

Pre-Requisites:
Electrical Circuits-I
Electrical Circuits-II
Electromagnetic Fields
Power Systems-I

Course Objective:
This course is an extension of Power systems-I course.

- It deals with basic theory of transmission lines modeling and their performance analysis.
- Also this course gives emphasis on Mechanical design of Transmission lines, Cables and Insulators.

UNIT-I: Transmission Line Parameters
Types of conductors - calculation of resistance for solid conductors - Calculation of inductance for single phase and three phase, single and double circuit lines, concept of GMR & GMD, symmetrical and asymmetrical conductor configuration with and without transposition, Numerical Problems. Calculation of capacitance for 2 wire and 3 wire systems, effect of ground on capacitance, capacitance calculations for symmetrical and asymmetrical single and three phase, single and double circuit lines, Numerical Problems.

UNIT-II: Performance Of Short And Medium Length Transmission Lines
Classification of Transmission Lines - Short, medium and long line and their model representations - Nominal-T, Nominal-Pie and A, B, C, D Constants for Short, medium, symmetrical & Asymmetrical Networks, Numerical Problems. Mathematical Solutions to estimate regulation and efficiency of all types of lines - Numerical Problems.

Performance of Long Transmission Lines
Long Transmission Line - Rigorous Solution, evaluation of A,B,C,D Constants, Interpretation of the Long Line Equations, Incident, Reflected and Refracted Waves -Surge Impedance and SIL of Long Lines, Wave Length and Velocity of Propagation of Waves - Representation of Long Lines - Equivalent-T and Equivalent Pie network models (numerical problems).

UNIT-III: Power System Transients
Types of System Transients - Travelling or Propagation of Surges - Attenuation, Distortion, Reflection and Refraction Coefficients - Termination of lines with different types of conditions - Open Circuited Line, Short Circuited Line, T-Junction, Lumped Reactive Junctions (Numerical Problems), Bewley's Lattice Diagrams, Attenuation and distortion of Travelling Waves.

Various Factors Governing the Performance Of Transmission Line
Skin and Proximity effects - Description and effect on Resistance of Solid Conductors - Ferranti effect - Charging Current - Effect on Regulation of the Transmission Line. Corona - Description of the phenomenon, factors affecting corona, critical voltages and power loss, Radio Interference.

UNIT-IV: Overhead Line Insulators

Types of Insulators, String efficiency and Methods for improvement, Numerical Problems - voltage distribution, calculation of string efficiency, Capacitance grading and Static Shielding.

Sag and Tension Calculations

Sag and Tension Calculations with equal and unequal heights of towers, Effect of Wind and Ice on weight of Conductor, Numerical Problems - Stringing chart and sag template and its applications.

UNIT-V: Underground Cables

Types of Cables, Construction, Types of Insulating materials, Calculation of Insulation resistance and stress in insulation, Numerical Problems. Capacitance of Single and 3-Core belted cables, Numerical

Problems. Grading of Cables - Capacitance grading, Numerical Problems, Description of Inter-sheath grading, HV cables.

Text Books:

1. C.L. Wadhwa, Electrical power systems - New Age International (P) Limited, Publishers,1998.
2. I.J. Nagarath& D.P Kothari , Power System Engineering, TMH 2/e, 2010
3. Power System Engineering- by R.K.Rajput Laxmi Publications(P) Limited, New Delhi 2006.
4. Power System Analysis by Grainger and Stevenson, Tata McGraw Hill.

Reference Books:

1. B.R.Gupta, Power System Analysis and Design, Wheeler Publishing.
2. AbhijitChakrpabarti, SunithaHalder, Power System Analysis, Operation and control, PHI, 3/e, 2010
3. TuranGonen, Electrical Power Transmission system engineering Analysis and design, CRC Press (Taylor & Francis Group) Special Indian Edition, 2/e.
4. M.L. Soni, P.V. Gupta, U.S. Bhatnagar, A. Chakrabarthy, Power System Engineering, Dhanpat Rai & Co Pvt. Ltd.

Course Outcomes:

After going through this course the student gets a thorough knowledge

- On calculation of Transmission line parameters, analysis of short, medium, long length lines and the factors affecting the performance of Transmission lines, transients in Transmission lines.
- Operation of different types of overhead line insulators, sag and tension calculations of Transmission lines and brief study of underground cables for power Transmission and Distribution.
- Able to apply the above conceptual to real-world problems and applications.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(A9216) CONTROL SYSTEMS

III Year B.Tech. EEE I-Sem **L T P C**
4 1 0 4

Pre-Requisites:
Engineering Physics
Mathematics-I
Mathematics-II
Electrical Circuits-I
Electrical Circuits-II

Course Objectives:
In this course it is aimed to introduce

- The principles and applications of control systems in everyday life.
- The basic concepts of block diagram representation,
- Introduce concept of stability of systems in frequency domain and time domain.
- Concept of state space representation and multi input and multi output systems.

UNIT-I: Introduction
Concepts of Control Systems- Open Loop and closed loop control systems and their differences- Different examples of control systems- Classification of control systems, Feed-Back Characteristics, Effects of feedback. Mathematical models – Differential equations, Impulse Response and transfer functions - Translational and Rotational mechanical systems.

Transfer function representation
Transfer Function of DC Servo motor - AC Servo motor- Synchro transmitter and Receiver, Block diagram representation of systems considering electrical systems as examples -Block diagram algebra – Representation by Signal flow graph - Reduction using mason's gain formula.

UNIT-II: Time Response Analysis
Standard test signals - Time response of first order systems – Characteristic Equation of Feedback control systems, Transient response of second order systems - Time domain specifications – Steady state response - Steady state errors and error constants – Effects of proportional derivative, proportional integral systems.

UNIT-III: State Space Analysis of Continuous Systems
Concepts of state, state variables and state model, derivation of state models from block diagrams, Diagonalization - Solving the Time invariant state Equations- State Transition Matrix and its Properties. Concepts on Controllability and Observability

UNIT-IV: Stability Analysis
The concept of stability – Routh- Hurwitz stability criterion – Absolute stability and conditional stability.
Root Locus Technique:

The root locus concept - construction of root loci-effects of adding poles and zeros to G(s) H(s) on the root loci.

Frequency Response Analysis:

Introduction, Frequency domain specifications-Bode diagrams-Determination of Frequency domain specifications and transfer function from the Bode Diagram-Phase margin and Gain margin-Stability Analysis from Bode Plots.

UNIT-V: Stability Analysis in Frequency Domain

Polar Plots, Nyquist Plots and applications of Nyquist criterion to find the stability –Effects of adding poles and zeros to G(s)H(s) on the shape of the Nyquist diagrams.

Classical Control Design Techniques:

Compensation techniques – Lag, Lead, and Lead-Lag Controllers design in frequency Domain, PID Controllers- Numerical Problems.

Text Books:

1. Control Systems Engineering – by I. J. Nagrath and M. Gopal, New Age International (P) Limited, Publishers, 2nd edition.
2. Automatic Control Systems 8th edition– by B. C. Kuo 2003– John wiley and sons.
3. Modern Control Engineering – by Katsuhiko Ogata – Prentice Hall of India Pvt. Ltd., 3rd edition, 1998.

Reference Books:

1. Control Systems by N.K.Sinha, New Age International (P) Limited Publishers, 3rd Edition, 1998.
2. Control Systems Engg. by NISE 3rd Edition – John wiley
3. Control Systems by S.Kesavan, Hitech Publications.
4. "Modeling & Control of Dynamic Systems" by Narciso F. Macia George J. Thaler, Thomson Publishers.
5. Solutions and Problems of Control Systems by A.K.Jairath, CBS Publictions,1992.

Course Outcomes:

After going through this course, the student gets knowledge on

- Open loop and closed loop systems, concept of feedback in control systems,
- Mathematical modeling of systems.
- Transfer functions of servomotors and concepts of synchros.
- Block diagram representation of control system and signal flow graphs,
- Time response analysis of different ordered systems through their characteristic equation and time-domain specifications
- Stability analysis of control systems
- Frequency response Control Systems

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

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(A9217) POWER ELECTRONICS

III Year B.Tech. EEE I-Sem

L	T	P	C
4	0	0	4

Pre-Requisites:
Applied Physics
Electrical Circuits-I
Electrical Circuits-II
Electronic Devices & Circuits

Course Objectives:

- With the advent of semiconductor devices, revolution is taking place in the power transmission distribution and utilization.
- This course introduces the basic concepts of power semiconductor devices, converters and choppers and their analysis.

UNIT-I: Power Semi Conductor Devices and Commutation Circuits
Thyristors,TRIAC,DIAC – Silicon Controlled Rectifiers (SCR's) – BJT – Power MOSFET – Power IGBT and their characteristics and other Thyristors – Basic theory of operation of SCR – Static characteristics – Turn on and Turn off methods- Dynamic characteristics of SCR - Turn on and Turn off times -Salient points.
Two transistor analogy of SCR – R,RC,UJT firing circuits– Series and parallel connections of SCR's – Snubber circuit details – Specifications and Ratings of SCR's, BJT, IGBT - Numerical problems – Line Commutation and Forced Commutation circuits.

UNIT-II: Single Phase Half Controlled Converters
Phase control techniques – Single phase Line commutated converters – Half wave controlled converter and Half controlled converter with Resistive, R-L load and R-L-E load– Derivation of average load voltage and current -Active and Reactive power inputs to the converters without and with Freewheeling Diode –Numerical problems

Single Phase Full Converters:
Fully controlled converters, Mid point and Bridge connections with Resistive, R-L loads and R-L-E load– Derivation of average load voltage and current – Line commutated inverters , semi-converters, active and Reactive power inputs to the converters , Effect of source inductance – Expressions of load voltage and current – Numerical problems.

UNIT-III: Three Phase Line Commutated Converters:
Three phase converters – Three pulse and six pulse converters and bridge connections with R and R-L and R-L-E loads, average voltage and current expressions– Semi Converters, Effect of Source inductance–Dual converters Waveforms –Numerical Problems.

UNIT-IV: AC Voltage Controllers and Cyclo Converters
AC voltage controllers – Single phase two SCR's in anti parallel with R and RL loads , modes of operation of Triac – Triac with R and RL loads – Derivation of RMS load voltage, current and power factor- wave forms , Numerical problems.
Cyclo Converters: Single phase Mid point Cyclo converters with resistive and inductive loads, Bridge Configuration of Cyclo converters- Waveforms.

UNIT-V: Choppers & Inverters

Choppers-DC Jones Chopper with R and RL Loads– Time ratio control and Current limit control strategies – Step down Choppers- Derivation of load voltage and currents with R, RL and RLE loads- Step up Chopper – load voltage expression and Problems.

Inverters – Single phase inverter – Waveforms, Three Phase Inverters (180,120 degrees modes of operation), Voltage control techniques for inverters- Pulse width modulation techniques – Numerical problems.

Text Books:

1. P.S.Bhimbra , "Power Electronics ", Khanna publications.
2. M. H. Rashid, Power Electronics : Circuits, Devices and Applications,– Prentice Hall of India, 2nd edition, 1998.
3. Power Electronics: Converters, Applications, and Design By Ned Mohan, Tore M. Undeland, John Wiley & Sons,2009.

Reference Books:

1. Power Electronics, Vedam Subramanyam, New Age International (P) Limited, Publishers.
2. Elements of Power Electronics, Philip T. Krein, Oxford University Press.
3. Power Electronics, M. S. Jamil Asghar, PHI Private Limited.
4. Power Electronics, P.C.Sen,Tata Mc Graw-Hill Publishing.

Course Outcomes:

- After going through this course the student gets a thorough knowledge on construction operation V-I characteristics commutation firing and protection of various power semiconductor devices.
- Focused analysis of thyristor devices nature of the R, R-L, and R-L-E Loads for different power inputs.
- AC-DC power conversion through single phase and three phase controlled rectifiers.
- DC-DC power conversion through step and step down coppers.
- AC-AC power conversion through AC Voltage controllers, frequency conversion through Cyclo converters.
- DC-AC power conversion through single phase and three phase Inverters, different types of PWM techniques, steady state and transient state analysis of all the power converters with which he/she can be able to apply the above conceptual things to real world Electrical and Electronics problems and applications.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(A9218) RENEWABLE ENERGY SOURCES
(PROFESSIONAL ELECTIVE-I)

III Year B.Tech. EEE I-Sem

L	T	P	C
3	0	0	3

Pre Requisites:
Applied Physics
Engineering Chemistry,
Power Systems-I
Thermal & Hydro prime movers

Course Objectives:
To make the student
- Introduce to the technology of renewable sources of energy
- Learn about the solar radiation, its applications and radiation measuring instruments
- Learn about the various types of geothermal resources and its applications
- Study the biomass energy resources , bio-mass systems
- Learn the methods of energy extraction from the wind and oceans
- Learn to the technology of direct energy conversion methods

UNIT – I Principles of Solar Radiation:
Role and potential of new and renewable source, the solar energy option, Environmental impact of solar power, physics of the sun, the solar constant, extraterrestrial and terrestrial solar radiation, solar radiation on titled surface, instruments for measuring solar radiation and sun shine, solar radiation data for India.

UNIT-II Solar Energy Collection:
Flat plate and concentrating collectors, classification of concentrating collectors, orientation and thermal analysis, advanced collectors, tracking CPC and solar swing

Solar Energy Storage And Applications: Different methods, Sensible, latent heat and stratified storage, solar ponds. Solar Applications- solar heating/cooling technique, solar distillation and drying, photovoltaic energy conversion, applications of PV system-PV hybrid systems

UNIT-III Wind Energy:
Sources and potentials, horizontal and vertical axis windmills, performance characteristics, Betz criteria, analysis of aerodynamic forces acting on blade, applications.

Bio-Mass: Principles of Bio-Conversion, Anaerobic/aerobic digestion, types of Bio-gas digesters, gas yield, combustion characteristics of bio-gas, utilization for cooking, I.C.Engine operation and economic aspects, biomass resource development in India.

UNIT-IV Geothermal Energy:
Structure of earth's interior- geothermal sites- earthquakes & volcanoes- geothermal resources- hot springs-steam ejection- principle of working- types of geothermal station with schematic representation site selection for geothermal power plants-problems associated with geothermal conversion-applications-geothermal energy prospects in India.

Ocean Energy: OTEC, Principles utilization, setting of OTEC plants, thermodynamic cycles. Tidal and wave energy: Potential and conversion techniques, mini-hydel power plants, and their economics.

UNIT-V Direct Energy Conversion:
Need for DEC, Carnot cycle, limitations, principles of DEC. Thermo-electric generators, seebeck, peltier and joule Thomson effects, Figure of merit, materials, applications, MHD generators, principles, dissociation and ionization, hall effect, magnetic flux, MHD accelerator, MHD Engine, power generation systems, electron gas dynamic conversion, economic aspects. Fuel cells, principles, faraday's law's, thermodynamic aspects, selection of fuels and operating conditions.

Text books:

1. Non-Conventional Energy Sources by G.D. Rai, Khanna Publihers, fourth edition, 2008

Reference books:

1. Suhas.P.Sukhatma and Nayak.J.K., "solar Eenergy", TMH, New Delhi, 3rd edition, 2008
2. D.P.Kothari and Rakesh Ranjan and K.C. Singal., " Renewable energy resources and emerging technologies"Prentice Hall of India Pvt.Ltd., 2nd Edition, 2011
3. Non-Conventional Energy Systems / K Mittal /Wheeler

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

- Apply the technology to capture the energy from the renewable sources like sun, wind, ocean, biomass, geothermal.
- use different renewable energy sources to produce electrical power
- minimize the use of conventional energy sources to produce electrical energy
- identify the fact that the conventional energy resources are depleted

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(A9219) RELIABILITY ENGINEERING
(PROFESSIONAL ELECTIVE-I)

III Year B.Tech. EEE I-Sem

L	T	P	C
3	0	0	3

Pre-Requisites:

- Mathematics
- Probability and Statistics

Course Objectives:

To impart knowledge on

- Reliability Engineering Principles.
- Causes and types of failures.
- Preventive maintenance, measures of reliability.
- Reliability Evaluation of basic configurations.
- Modeling concepts and Reliability Evaluation of repairable and irrepairablesystems.

Unit 1:

Elements of Probability Theory:

Basics of probability, probability distributions, Random variables, Density and Distribution functions- Binomial distribution,Mathematical Expectations (Mean or expected Value, Standard Deviation and Variance), Poisson distribution, normal distribution, exponential distribution, Weibull distribution, Derivation ofMathematical Expectations for distributions

Definition of Reliability: Definition of terms used in reliability, Component reliability, Hazard rate, derivation of the reliability function in terms of the hazard rate. Hazard models - Bath tub curve, Effect of preventive maintenance and Wear-out Maintenance. Measures of reliability: Mean Time to Failure and Mean Time Between Failures.

Unit 2:

Network Modeling and Evaluation of Simple Systems: Basic concepts- Evaluation of network Reliability / Unreliability - Series systems, Parallel systems - Series-Parallel systems- Partially redundant systems, Standby Systems, Examples.

Network Modelingand Evaluation of Complex Systems: Conditional probability and Decompostion method- Tie-set and Cut-set approach- Connection Matrix method-Tree and Logic Diagrams procedure-- Examples.

Unit 3:

Time Dependent Probability: Basic concepts- Need of time dependent probabilities, Derivation of Reliability functions f(t), Q(t), R(t) and h(t) - Relationship between these functions.

Network Reliability Evaluation using Probability Distributions: Reliability Evaluation of Series systems, Parallel systems – Partially redundant systems- Standby Systems- determination of reliability measures- MTTF and MTBF for series,paralleland other complex systems – Examples.

Unit 4:

Discrete Markov Chains: Basic concepts- Stochastic transitional probability matrix- time dependent probability evaluation- Limiting State Probability evaluation- Absorbing states – Examples

Continuous Markov Processes: Modeling concepts- State space diagrams- Unreliability evaluation of single and two component repairable systems

Unit 5:Frequency and Duration Techniques: Frequency and duration concepts, application to multi-state problems, Frequency balance approach.

Approximate System Reliability Evaluation: Series systems – Parallel systems- Network reduction techniques- Cut-set approach- Common mode failures modeling and evaluation techniques- Examples.

Course Outcomes: After this course, the student will be able to

- Model various systems applying reliability networks
- Evaluate the reliability of simple and complex systems
- Estimate the limiting state probabilities of repairable systems
- Apply various mathematical models for evaluating reliability of irrepairable systems

Text Books:

1. Roy Billinton and Ronald N Allan, Reliability Evaluation of Engineering Systems, Plenum Press.
2. E.Balagurusamy, Reliability Engineering by Tata McGraw-Hill Publishing Company Limited

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(A9220) ELECTRICAL ENGINEERING MATERIALS
(PROFESSIONAL ELECTIVE-I)

III Year B.Tech. EEE I-Sem

L	T	P	C
3	0	0	3

Pre-Requisites:
Applied Physics

Course Objectives:

- To import the knowledge on Electrical Engineering materials Classification and their applications
- Performance characteristics of various Semiconducting, Dielectric & Insulation Materials

UNIT-I

Classification of Materials:
Introduction, Atomic Theory, Inter Atomic Bonds

Conducting Materials:
Introduction, Resistivity and factors affecting resistivity, Classification of Conducting materials into low-resistivity and high resistivity materials, Low Resistivity Materials and their Applications ,Resistivity Materials and their applications,Superconductiong Materials.

UNIT-II

Semiconducting Materials:
Introduction ,The Atom, Conductors and Insulators, Semiconductors, Electron Energy and Energy Band Theory, Excitation of atoms, Insulators, Semiconductors and Conductors, Semiconductor Materials, Convalent Bonds, Intrinsic Semiconductors-Type Materials, P-Type Materials, Manority and Minority Carriers, Semi-Conductors Materials, Applications of Semiconductor Materials.

Dielectric Materials: Introduction, Dielectric constant of Permittivity, Polarisation, Dieletric Losses, Electric Conductivity of Dielectrics and their Break Down, Properties of Dielectrics, Applications of Dielectrics.

UNIT-III

Insulating Materials: Introduction, General properties of Insulating materials, Classification, Properties, Insulating Gasses.

Magnetic Materials: Introduction, Classification, Magnetization curve, Hysteresis, Eddy Currents, Curie point, Magnetostriction, Soft and Hard Magnetic materials,

UNIT-IV

Materials for special purposes: Introduction, Structural materials, Protective materials, Other Materials.

Electronic Components: Resistors, Capacitors, Inductors, Transformers.

Text books:

1 S.K.Bhattacharya “Electrical Engineering Materials” S.K.Kataria & Sons.

Reference books:

1.A.J.Dekker “Electrical Engineering Materials” PHI

Course Outcomes:

Student can able to

- Classify various Electrical & Electronics Engineering Materials
- Applications of those Materials in Designing Various Electrical & Electronics Engineering Devices

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(A9221) ELECTRICAL MACHINES-III

III Year B.Tech. EEE I-Sem **L T P C**
3 1 0 3

Pre-Requisites:
Electrical Machines-I
Electrical Machines-II

Course Objectives:
- It deals with the detailed analysis of Synchronous Generators and Motors which are prime source of Electrical power generation and utilities.
- Also covers different types of single phase motors which are having significant applications in house hold appliances and control systems.

UNIT-I: Construction and Principle of operation of synchronous machine:
Constructional features of round rotor and salient pole machines, Armature windings: Integral slot and fractional slot windings; Distributed and concentrated windings Distribution Pitch and windings factors, E.M.F Equation.
Harmonics ingenerated E.M.F. Superposition of harmonics, Armature reaction, Leakage reactance, Synchronous reactance and impedance, Experimental determination, Phasor diagram, Load characteristics.

UNIT-II: Regulation of Synchronous generator:
Regulation by synchronous impedance method, MMF. Method, Z.P.F. method and A.S.A methods, Salient pole alternators. Two reaction analysis, Experimental determination of X_d and X_q (Slip test) Phasor diagrams, Regulation of salient pole alternators.

UNIT-III: Parallel operation of Synchronous generators:
Synchronizing alternators with infinite bus bars, Synchronizing power torque, Parallel operation and load sharing, Effect of change of excitation and mechanical power input, Analysis of short circuit current wave form, Determination of sub-transient, Transient and steady state reactances.

UNIT-IV: Synchronous motors- principle of operation:
Theory of operation, Phasor diagram, Variation of current and power factor with excitation synchronous condenser, Mathematical analysis for power developed
Power circles: Excitation and power circles - Hunting and its suppression, Methods of starting, synchronous induction motor.

UNIT-V: Single phase motors Special machines:
Single phase Motors: Single phase induction motor- Constructional features Double revolving field theory, Cross Field theory Equivalent Circuit - Spilt phase motors – Capacitor start Capacitor run motors, shaded pole motor. Principle of A.C. Series motor-Universal motor, Stepper motor, Schrage Motor, BLDC Motor, PMDC and Reluctance Motor. (Qualitative Treatment only).

Text Books:

1. Electrical Machines – by P.S. Bimbra, Khanna Publishers.
2. Electric Machines- by I.J. Nagrath & D.P. Kothari, Tata Mc Graw-Hill Publishers, 3rd Edition 2006.

Reference Books:

1. Performance and Design of AC Machines, MG. Say, BPB Publishers
2. Electrical Machines by Mulukutla S.Sarma, Mukesh K. Pathak, Cengage Learning, 2009.
3. Electric Machinery – by A.E. Fitzgerald, C.Kingsley and S.Umans,Mc Graw-Hill Companies, 5th edition, 1990.

Course Outcomes:

- After going through this course the student gets a thorough knowledge on, construction operation characteristics regulation parallel-operation power circle starting & speed control methods of synchronous machines.
- Construction operation characteristics of single-phase motor and special machines, with which he/she can be able to apply the above conceptual things to real-world electrical and electronics problems and applications.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(A9222) ELECTRICAL MEASUREMENTS LAB

III Year B. Tech. EEE I-Sem

L	T	P	C
0	0	3	2

Pre-Requisites:
Electrical Measurements & Instrumentation

Course Objectives:

- This course introduces the basic principle of all measuring instruments
- It also deals with the measurements of RLC parameters
- It also deals with the measurement voltage, current, power, power factor & energy

List of Experiments:

1. Calibration and Testing of single phase Energy meter
2. Calibration of Dynamometer power factor meter
3. Kelvin's double bridge – Measurements of resistance – Determination of Tolerance
4. Measurement of Capacitance and Inductance using Schering & Anderson bridge
5. Measurement of 3-phase Reactive power with single phase Wattmeter
6. Measurement of parameters of Choke coil using 3-volmeter & 3-ammeter methods
7. Calibration LPF wattmeter – by Phantom Loading
8. Measurement of 3-phase power with single wattmeter and 2 C.T.'s
9. Resistance strain gauge – strain measurements and calibration
10. Transformer turns ratio measurement
11. LVDT and capacitance pickup – characteristics and calibration
12. C.T.'s testing using mutual inductor – measurement of % ratio error and phase angle of given C.T. by null method
13. P.T. testing using comparison – V.G as null detector – Measurement of % ratio error and phase angle of the given P.T.

Note: Any ten of the above experiments are to be conducted

Course outcomes:

- Compare performance of MC , MI and Dynamometer types of measurements, Energy meter
- Determine the circuit parameters using AC and Dc bridges.
- Compute the errors CT's and PT's.
- Select transducers for the measurement of displacement and strain.
- Understand the performance of industrial instruments

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(A9223) ELECTRICAL MACHINES – II LAB

III Year B.Tech. EEE I-Sem

L	T	P	C
0	0	3	2

Pre-Requisites:
Electrical Machines-II

Course Objectives:
This course is aimed

- To evaluate the Principles and working of all static and rotating AC machines
- To understand testing of transformers.
- To estimate the performance of AC machines and identify their applications.

List of Experiments:

1. Open Circuit & Short Circuit tests on single phase Transformer.
2. Sumpner's test on a pair of single phase Transformers.
3. Brake test on three phase Induction Motor.
4. No Load & Blocked rotor tests on three phase Induction Motor.
5. Regulation of three phase Alternator by synchronous impedance and MMF methods
6. '**V**' & inverted '**V**' curves of a three phase Synchronous Motor.
7. Equivalent circuit of a single phase Induction Motor.
8. Determination of X_d & X_q of a Salient pole Synchronous Machine.
9. Separation of core losses of a single phase Transformer.
10. Scott connection of Transformers.
11. Load test on a three phase Alternator

Note: Minimum Ten Experiments are to be conducted

Course Outcomes:
After the completion of the course students can be able to

- Select range of apparatus based on the ratings.
- Draw the Equivalent circuits and analyze various AC machines
- Determine performance and Characteristics of AC machinery
- Evaluate the efficiency of the machine by analyzing test results.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(A9224) BASIC SIMULATION LAB

III Year B.Tech. EEE I-Sem

L	T	P	C
0	0	3	2

Pre-Requisites:
Electrical Circuits-I
Electrical Circuits-II

Course Objectives:-

- To get the Simulation Knowledge about Nodal Analysis.
- To get the Simulation Knowledge about Various Signals Generation.

List of Experiments

1. Nodal Analysis.
2. Simulation of DC Circuits.
3. DC Transient response.
4. Simulation of Time response of second order RLC series circuit
5. Simulation of Time response of second order RLC Parallel circuit
6. Generation of Various Signals and Sequences (Periodic and Aperiodic), such as Unit Impulse, Unit Step, Square, Saw tooth, Triangular, Sinusoidal, Ramp, Sine.
7. Computation of Unit sample, Unit step and Sinusoidal responses of the given LTI system and verifying its physical reliability and stability properties.
8. Finding the Fourier Transform of a given signal and plotting its magnitude and phase spectrum.
9. Waveform Synthesis using Laplace Transform.
10. Locating the Zeros and Poles and plotting the Pole-Zero maps in S-plane and Z-Plane.
11. Simulation of Superposition & Reciprocity Theorems.
12. Simulation of Maximum Power Transfer Theorem.

Note: Minimum Ten Experiments are to be conducted using MATLAB or equivalent open source software.

Course Outcomes:

After learning this course the student can able to

- Get the simulation knowledge on network analysis.
- Generate various Periodic Signals
- Analyze time response of LTI Systems
- Know the applications of Fourier Transforms and Laplace Transforms

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(A9225) POWER SEMICONDUCTOR DRIVES

III Year B.Tech. EEE II-Sem

L	T	P	C
4	0	0	4

Pre-Requisites:
Electrical Machines-I
Electrical Machines-II
Electrical Machines-III
Power Electronics

Course Objectives:

- This course is an extension of Power Electronics application to AC and DC drives.
- Control of DC, Motor drives with 1 phase and 3 phase converters are given in detail.
- Control of AC, Motor drives with variable frequency converters and variable voltage are presented for both stator and rotor side.
- Different type of breakings is given in detail.

UNIT-I: Control of DC motors by Single phase Converters
Introduction to Thyristor controlled Drives, Single Phase semi and Fully controlled converters connected to d.c separately excited and d.c series motors – continuous current operation – output voltage and current waveforms – Speed and Torque expressions – Speed – Torque Characteristics- Problems on Converter fed d.c motors.
Control of DC motors by Three phase Converters
Three phase semi and fully controlled converters connected to d.c separately excited and d.c series motors – output voltage and current waveforms – Speed and Torque expressions – Speed – Torque characteristics – Problems.
Four Quadrant operation of DC Drives
Introduction to Four quadrant operation – Motoring operations, Electric Braking – Plugging, Dynamic and Regenerative Braking operations. Four quadrant operation of D.C motors by dual converters – Closed loop operation of DC motor (Block Diagram Only)

UNIT-II: Control of DC motors by Choppers
Single quadrant, Two –quadrant and four quadrant chopper fed dc separately excited and series excited motors – Continuos current operation – Output voltage and current wave forms – Speed torque expressions – speed torque characteristics – Problems on Chopper fed d.c Motors – Closed Loop operation (Block Diagram Only)

UNIT-III: Control of Induction Motor through Stator voltage
Variable voltage characteristics-Control of Induction Motor by Ac Voltage Controllers – Waveforms – speed torque characteristics.
Control of Induction Motor through Stator Frequency
Variable frequency characteristics-Variable frequency and v/f control of induction motor by Voltage source,current source inverter and Cycloconverters, PWM control – Comparison of VSI and CSI operations – Speed torque characteristics – numerical problems on induction motor drives – Closed loop operation of induction motor drives (Block Diagram Only)

UNIT-IV: Control of Induction motor of Rotor side

Static rotor resistance control – Slip power recovery – Static Scherbius drive – Static Kramer Drive – their performance and speed torque characteristics – advantages applications – problems

UNIT-V: Control of Synchronous Motors

Separate control & self control of synchronous motors – Operation of self controlled synchronous motors by VSI and CSI cycloconverters. Load commutated CSI fed Synchronous Motor – Operation – Waveforms – speed torque characteristics – Applications – Advantages and Numerical Problems – Closed Loop control operation of synchronous motor drives (Block Diagram Only), variable frequency control, Cyclo converter, PWM, introduction to Space Vector PWM, VFI, CSI.

Text Books:

1. Fundamentals of Electric Drives – by G K Dubey Narosa Publications
2. Power Electronic Circuits, Devices and applications by M.H.Rashid, PHI.
3. Electronic motor drives modeling Analysis and control –R. Krishnan –I Edition Prentice Hall India

Reference Books:

1. Power Electronics – MD Singh and K B Khanchandani, Tata – McGraw-Hill Publishing company,1998
2. Modern Power Electronics and AC Drives by B.K.Bose, PHI.
3. Thyristor Control of Electric drives – Vedam Subramanyam Tata McGraw Hill Publilcations.
4. A First course on Electrical Drives – S K Pillai New Age International(P) Ltd. 2nd Editon.

Course Out comes:

- Students will get technical knowledge of various control techniques involved in machines.
- Ability to work in Industries related to drives.
- Ability to apply technical knowledge in Electric Traction and application involved in motion control.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(A9226) POWER SYSTEM OPERATION AND CONTROL

III Year B.Tech. EEE II-Sem

L	T	P	C
4	0	0	4

Course Objectives:

- This subject deals with Economic Operation of Power Systems, Hydrothermal scheduling, modeling of turbines, generators and automatic controllers.
- It emphasizes on Single Area and Two Area Load Frequency Control and Reactive Power Control.

UNIT-I Economic Operation of Power Systems

Optimal Operation Of Generators in Thermal Power Stations, Heat Rate Curve, Cost Curve, Incremental Fuel and Production Costs, Input-Output Characteristics of Steam Unit, Optimum Generation Allocation with line losses neglected. Optimum Generation Allocation including the effect of Transmission Line Losses, Loss Coefficients, Transmission Line Loss Formula.

UNIT -II Hydrothermal Scheduling

Optimal Scheduling of Hydrothermal system, Hydroelectric Power Plant Models, types of Scheduling Problems, short term Hydrothermal Scheduling Problem.

UNIT -III Load Frequency Control

Modelling of Speed Governing System, Steam Turbine, Hydro Turbine And Generator. Necessity of keeping frequency constant, definitions of Control Area, Single Area Control, block diagram representation of an Isolated Power System, Steady State Analysis, Dynamic Response, Proportional Plus Integral Control of single area and its block diagram representation, Steady State Response. Load Frequency Control of 2- area system, Tie-Line Bias Control, comparison between Load Frequency Control and Economic Dispatch Control.

UNIT- IV Power Factor And Voltage Control

Causes of low P.F, Methods of Improving P.F, Static Capacitor and Synchronous Condensers, Phase Advancers, most Economical P.F. for constant KW load and constant KVA type loads, Voltage Control, Shunt Capacitors, Series Capacitors and their location in the Power System, numerical problems.

UNIT- V Reactive Power Control

Overview of Reactive Power Control, Reactive Power Compensation in Transmission Systems, advantages and disadvantages of different types of Compensating Equipment for Transmission Systems, Load Compensation, specifications of Load Compensator, Uncompensated And Compensated Transmission Lines, Shunt And Series Compensation. Brief introduction to role of FACTS devices for Reactive power Control.

Text books:

1. Power system stability and control by Prabha Kundur TMH Publishers
2. Modern Power System Analysis by I.J.Nagrath & D.P.Kothari TMH Publishers, 2nd edition.

3. Generation of electrical energy by B. R. Gupta, S. Chand and Company.

Reference books:

1. Power System Analysis and Design by J.Duncan Glover and M.S.Sarma., Thomson Publishers, 3rd Edition.
2. Electric Energy systems Theory by O.I.Elgerd, TMH Publishers, Second edition.
3. Power System Analysis by Grainger and Stevenson, TMH Publishers.
4. Power System Analysis by Hadi Saadat, TMH Publishers.

Course Outcomes:

After completing the course the student shall be able to

- Explain the functional content of Economic Load Dispatch and Load Frequency Control
- Create simple architectures for simple area load frequency control and two area load frequency control
- Understand importance of Reactive Power Compensation
- To gain knowledge of emerging trends in Power systems used for system operation and control.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(A9621) MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS
(OPEN ELECTIVE-I)

III Year B.Tech. EEE II-Sem

L	T	P	C
3	0	0	3

Pre-Requisites: None

Objectives:

- To enable the student to understand and appreciate, with a practical insight, the importance of certain basic issues governing the business operations namely.
- Demand and supply, production function, cost analysis, markets forms of business organizations, capital budgeting and financial accounting and financial analysis by using ratios.

UNIT – I Introduction to Managerial Economics: Definition, Nature and Scope Managerial Economics Demand Analysis: Demand Determinants, Law of Demand and its exceptions, Definition, Types, Measurement and Significance of Elasticity of Demand. Demand Forecasting, Factors governing demand forecasting, methods of demand forecasting (survey methods, statistical methods, expert opinion method, test marketing, controlled experiments, judgmental approach to demand forecasting)

UNIT – II Production and Cost Analysis: Production Function – Isoquants and Isocosts, MRTS, Least Cost Combination of Inputs, Production function, Laws of Returns, Internal and External Economies of Scale. Cost Analysis: Cost concepts, Opportunity cost, Fixed Vs. Variable costs, Explicit costs Vs.Implicit costs, Out of pocket costs vs. Imputed costs. Break-even Analysis (BEA)-Determination of Break-Even Point (simple problems)-Managerial Significance and limitations of BEA.

UNIT – III Introduction to Markets & Pricing strategies: Market structures: Types of competition, Features of Perfect competition, Monopoly and Monopolistic Competition. Price-Output Determination in case of Perfect Competition and Monopoly. Pricing Strategies, Business & New Economic Environment: Characteristic features of Business, Features and evaluation of Sole Proprietorship, Partnership, Joint Stock Company, Public Enterprises and their types, Changing Business Environment in Post-liberalization scenario.

UNIT – IV Capital and Capital Budgeting: Capital and its significance, Types of Capital, Estimation of Fixed and Working capital requirements, Methods and sources of raising finance, Nature and scope of capital budgeting, features of capital budgeting proposals, methods of Capital Budgeting: Payback Method, Accounting Rate of Return (ARR) and Net Present Value Method (simple problems)

UNIT – V Introduction to Financial Accounting & Financial Analysis: Double-Entry Book Keeping, Journal, Ledger, Trial Balance – Final Account (Trading Account, Profit and Loss Account and Balance Sheet with simple adjustments.) Computation, Analysis and Interpretation of Liquidity Ratios (Current Ration and quick ratio), Activity Ratios (Debt-Equity ratio, Interest Coverage ratio), and Profitability ratios (Gross Profit Ratio, Net Profit ratio, Operating Ratio, P/E Ratio and EPS).

Text Books:

Aryasri: Managerial Economics and Financial Analysis, 2/e, TMH, 2005.
Varshney & Maheswari: Managerial Economics, Sultan Chand, 2003.

References Books:

1) Ambrish Gupta,Financial Accounting for Management, Pearson Education, New Delhi, 2004.
2) Shim & Siegel: Financial Accounting (Schaum's Outlines), 2/e TMH, 2004
3) Chary: Production and Operations Management, 3/e, TMH, 2004.
4) Domnick Salvatore: Managerial Economics In a Global Economy, 4th Edition, Thomson, 2003.
5) Narayanaswamy: Financial Accounting-A Managerial Perspective, PHI, 2005.
6) Peterson & Lewis: Managerial Economics, 4th Edition, Pearson Education, 2004.
7) Raghunatha Reddy & Narasimhachary: Managerial Economics & Financial Analysis, Scitech, 2005.
8) S.N.Maheswari & S.K. Maheswarial, Financial Accounting, Vikas, 2005.
9) Truet and Truet: Managerial Economics: Analysis, Problems and Cases, Wiley, 2004.
10) Dwivedi: Managerial Economics, 6th Ed., Vikas, 2002.
11) Yogesh Maheswari: Managerial Economics, 2nd Ed., PHI, 2005

Course Outcomes:

- To study fundamental concepts in managerial economics and financial analysis including certain basic issues governing the business operations.
- To learn the concepts of demand, elasticity of demand and demand forecasting and methods of demand forecasting.
- To learn various issues involved in production decision analysis.
- To gain the knowledge of Break – Even Analysis and its importance in managerial decision making.
- To learn different types of market environment under various types of competition.
- To gain the knowledge of new economic environment in post – liberalization scenario.
- To know the concepts of capital budgeting and various methods of capital budgeting and its application in business decision making.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(A9455) PRINCIPLES OF COMMUNICATION SYSTEMS
(OPEN ELECTIVE-I)

III Year B.Tech. EEE II-Sem

L	T	P	C
3	0	0	3

Pre- Requisites: None

Course Objectives:
• To have understanding about different types of AM Communication systems (Transmitters & Receivers)
• To study in detail the different types of FM transmitters & Receivers and PM Transmitters and Receivers
• To gain knowledge about different digital modulation techniques for digital transmission.
• To have knowledge about base band transmission ISI and distortion free base band transmission
• To know the spread spectrum modulation techniques and different multiple access methods.

UNIT – I Spectral Analysis and Random Process
Spectral characteristics of periodic and aperiodic signal – Spectra of common signals related to communication – cross correlation – autocorrelation and power / energy density spectra – random signals and process – modelling noises.

UNIT – II Analog Modulation Systems
Basic principles of AM, FM, and PM – Spectra – power consideration – receivers characteristics and deduction of AM, FM, and PM and Systems performance – Threshold effects reduction.

UNIT – III Base Band Data Communication
Sampling and quantisation – PCM, ADPCM, DM, ADM, Base band pulse shaping – binary data formats – base band transmission – ISI – correlative coding – optimum SNR – matched filter detection.

UNIT – IV Digital Modulation
Digital modulation – coherent binary modulation techniques – coherent quadrature modulation techniques – non-coherent binary modulation – M-array modulation – performance of digital modulation systems based on probability if error – band width – ISI.

UNIT – V Spread Spectrum And Error Correction Techniques
Fundamental concepts – Direct sequence spread spectrums and frequency hopping spread spectrum – Block Codes – cyclic codes.

Text Books:
1. Bernald Sklan, 'Digital Communocation' Pearson Education, 2nd edition 2001.
2. Taub & Schilling, 'Principles of Communication', Tata McGraw Hill Publication, 1990.
3. Simon Haykins, 'Digital Communication', John Wiley, 2001.

References Books:

1. B.P.Lathi, 'Analog and Digital Communication Systems', PHI, 1992.
2. Proakis, 'Digital Communication', McGraw-Hill, 1992.
3. A.B.Carlson, 'Communication Systems' McGraw-Hill, 1992.
4. K.Sam Shanmugam,'Digital and Analog Communication Systems, John Wiley, 1985.

Reference Books:

1. Tarmo Anttalainen, Introduction to Telecommunications Network Engineering, Artech House Telecommunications Library.
2. Theodore Rappaport, Wireless Communications-Principles and practice, Printice Hall, 2002.
3. Roger L. Freeman, Fundamentals of Telecommunications, 2e, Wiley publications.
4. Kennady, Davis, Electronic Communications systems, 4e, TMH, 1999.

Course Outcomes:

- Identify various elements, processes, and parameters in telecommunications systems, and describe their functions, effects, and interrelationship
- Design procedure of AM transmission and reception, analyze, measure and evaluate the performance of a telecommunication systems and gains given criteria.
- Understand basic components of digital communication systems.
- Design optimum receivers for digital modulation techniques
- Know about deferent error detecting and error correcting codes like block codes, cyclic codes and convolution codes.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(A9512) CORE JAVA

(OPEN ELECTIVE-I)

III Year B.Tech. EEE II-Sem

L	T	P	C
3	0	0	3

Course Objectives:
Prerequisites: (A9501) PSCP, (A9506) DSThroughC++
Course Objectives:

Modern Computerization methods have matured in the problem solving aspects and presently use the concepts of object oriented treatment of issues. Data sets are used with more functional aspects using the concept of classes and objects with a distinct programming methodology which has become predominant. Many other important software development techniques are based upon the fundamental ideas employed in object-oriented programming. The CSE students are already exposed to preliminaries using C++. Now this course introduces Java and OOPs programming at a higher platform.

UNIT-I

OOP Concepts: Data Abstraction, Encapsulation, Inheritance, Benefits of inheritance, Polymorphism, Classes and Objects, Procedural and Object oriented Programming paradigms.

Java Programming: History of Java, Comments, Data Types, Variables, Constants, Scope and Life Time of Variable, Operators, Operator Hierarchy, Expressions, Type Conversion and Casting, Enumerated Types, Control Flow-Block Scope, Conditional Statements, loops, break, continue statements, simple java stand alone programs, arrays, console input and output, formatting output, constructors, methods, parameter passing, static fields and methods, access control, this reference, overloading methods and Constructors, recursion, garbage collection, Nested Classes, Inner Classes.

UNIT-II

Inheritance: Inheritance hierarchies super and sub classes, Member access rules, super keyword, and method over riding, preventing Inheritance: final classes and methods, the Object class and its methods.

Interfaces- Interfaces vs. Abstract classes, defining an interface, implementing interfaces, accessing implementations through interface references, extending interface.

UNIT-III

Packages- Defining, Creating and Accessing a Package, Understanding CLASSPATH, importing Packages.

Exception Handling- Dealing with Errors, benefits of Exception Handling, the classification of exceptions-exception Hierarchy, checked exceptions and unchecked exceptions, Usage of try, catch, throw, throws and finally, re-throwing exceptions, exception specification, built in exceptions, creating own exception sub classes.

UNIT-IV

Multi Threading- Differences between multiple processes and multiple threads, thread states, creating threads, interrupting threads, thread priorities, synchronizing threads, inter-thread communication, producer consumer pattern.

UNIT-V

Files- streams-byte streams, character streams, text Input/output, binary input/output random access file operations, File management using File class, exploring String Class.

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Text Books:

1. Java Fundamentals- A comprehensive Introduction, Hebert Schildt and Dale Skrien, TMH.

Reference Books:

1. Java for Programmers, P.J. Dietel and H.M Dietel,Peearson Education (OR) JAVA: How to Program P.J. Dietel and H.M. Dietel, PHI.
2. Object Oriented Programming through Java, P. Radha Krishna, University Press.
3. Thinking in Java, Bruce Ecel, Pearson Education
4. Programming in Java, S. Malhotra and S. Choudary, Oxford Univ. Press.

Course Outcomes (COs):

Following are the course outcomes that we attain:

1) **CO-1.** A strong foundation in core Computer science and engineering, both theoretical and applied concepts.
2) **CO-3.** Ability to model, understand and develop complex software for System Software as well as Application Software.
3) **CO-4.** An ability to function effectively within team.
4) **CO-7.** The board education necessary to understand the impact of computer science and engineering solutions in the scientific, societal and human context.
5) **CO-8.** Recognition of the need for, an ability to engage in life-long learning.

Learning Outcomes (LOs):

Upon successful completion of this course, students would be able to learn:

1. **Knowledge:** They can describe the principles of object-oriented programming, apply the concepts of data encapsulation, inheritance, and polymorphism to large-scale software and also acquire the concepts of Graphical User Interfaces.
2. **Professional Skill:** They can Design and develop object-oriented computer programs apart from that they can develop programs with Graphical User Interfaces capabilities.
3. **Transferable Skill:** They can formulate problems as steps so as to be solved systematically.
4. **Attitude:** They can integrate robustness, reusability, and portability into large-scale software development with team-work in mind.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(A9025) OPTIMIZATION TECHNIQUES
(OPEN ELECTIVE-I)

III Year B.Tech. EEE II-Sem

L	T	P	C
3	0	0	3

Pre-Requisites: Mathematics-I
Mathematics-II
Computational Mathematics

Course Objective:

- The scope of optimization technique in various industrial engineering applications and real world problems like i.e classical, linear programming.
- Transportation problem, simplex algorithm, dynamic programming, constrained and unconstrained optimization techniques solving and optimizing an electrical and electronic engineering circuits design problems m- real world situations.

UNIT - I: Introduction & Classical Optimization Techniques:

Statement of Optimization problem - design vector - design constraints - constraint surface - objective function - objective function surfaces - classification, Optimization problems Single variable Optimization - multivariable Optimization without constraints - necessary and sufficient conditions minimum/maximum - multivariable Optimization with equality constrain. Solution by method of Lagrange multipliers - multivariable Optimization with inequality constraints - Kuhn - Tucker conditions.

UNIT - II: Linear Programming:

Standard form of a linear programming problem r geometry of linear programming problems - definitions and theorems solution of a system of linear simultaneous equations - pivotal reduction of a general system of equations - motivation to the simplex method - simple algorithm.

UNIT - III: Transportation Problem:

Finding initial basic feasible solution by north - west corner rule, least cost method and Vogel's approximation method - testing for optimality of balanced transportation problems.

UNIT - IV: Assignment problems and Sequencing problems:

Assignment problems Mathematical formulation Hungarian Assignment method.
Sequencing problems processing of n-jobs through two machines
Processing of n-jobs through k-machines.

UNIT - V: Dynamic Programming:

Dynamic programming multistage decision processes - types - concept of sub optimization and the principle of optimality - computational procedure in dynamic programming - examples illustrating the calculus method of solution - examples illustrating the tabular method of solution, Introduction to Meta heuristic techniques, maximization of Sin(x) using Genetic Algorithm(GA) and Particle Swam optimization(PSO).

Text books:

1. Engineering optimization. Theory and practice" S. S.Rao, New Age International (P) Limited.
2. Optimization Methods in Operations Research and systems Analysis, K.V. Mittal and C. Mohan, New Age International (P) Limited.

Reference books:

1. Operations Research, Dr. S.D.Sharma.
2. Introductory Operations Research, H.S. Kasene & K.D. Kumar, Springer (India), Pvt .Ltd.
3. Operations Research: An Introduction, H.A.Taha, Pearson Pvt. Ltd.
4. Operations Research, Richard Bronson, Govindasami Naadimuthu, Tata Mc Graw - Hill Company Limited.

Course Outcomes:

After going through this course the student gets a thorough knowledge on, Optimization of electrical and electronics engineering problems through classical optimization techniques, linear programming, simplex algorithm, transportation problem, unconstrained optimization, and dynamic, programming, with which he/she can able to apply the above conceptual things to real world electrical and electronics problems and applications.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(A9227) HIGH VOLTAGE ENGINEERING
(PROFESSIONAL ELECTIVE-II)

III Year B.Tech. EEE II-Sem

L	T	P	C
3	0	0	3

Pre-Requisites:
Power Systems-II
Electrical Measurements & Instrumentation
Switch Gear and protection

Course Objectives:
- This subject deals with the detailed analysis of Breakdown occurring in gaseous, liquids and solid dielectrics.
- Information about generation and measurement of High voltage and current.
- In addition High voltage testing methods are also discussed.

UNIT-I: Introduction to High Voltage Technology And Applications
Electric Field Stresses, Gas / Vacuum as Insulator, Liquid Dielectrics, Solids and Composites, Estimation and Control of Electric Stress, Numerical methods for electric field computation, Surge voltages, their distribution and control, Applications of insulating materials in transformers, rotating machines, circuit breakers, cable power capacitors and bushings.

UNIT- II: Break Down In Gaseous and Liquid Dielectrics
Gases as insulating media, collision process, Ionization process, Townsend's criteria of breakdown in gases, Paschen's law. Liquid as Insulator, pure and commercial liquids, breakdown in pure and commercial liquids.

Break Down In Solid Dielectrics
Intrinsic breakdown, electromechanical breakdown, thermal breakdown, breakdown of solid dielectrics in practice, Breakdown in composite dielectrics, solid dielectrics used in practice.

UNIT – III: Generation of High Voltages and Currents
Generation of High Direct Current Voltages, Generation of High alternating voltages, Generation of Impulse Voltages, Generation of Impulse currents, Tripping and control of impulse generators.

Measurement of High Voltages And Currents
Measurement of High Direct Current voltages, Measurement of High Voltages alternating and impulse, Measurement of High Currents-direct, alternating and Impulse, Oscilloscope for impulse voltage and current measurements.

UNIT–IV: Non-Destructive Testing of Material and Electrical Apparatus
Measurement of D.C Resistivity, Measurement of Dielectric Constant and loss factor, Partial discharge measurements.

High Voltage Testing of Electrical Apparatus
Testing of Insulators and bushings, Testing of Isolators and circuit breakers, testing of cables, Testing of Transformers, Testing of Surge Arresters, and Radio Interference measurements.

UNIT – V: Over Voltage Phenomenon and Insulation Co-Ordination

Natural causes for over voltages – Lightning phenomenon, Overvoltage due to switching surges, system faults and other abnormal conditions, Principles of Insulation Coordination on High voltage and Extra High Voltage power systems.

Text books:

1. M.S.Naidu and V. Kamaraju , High Voltage Engineering by– TMH Publications, 3rd Edition
2. E.Kuffel, W.S.Zaengl, J.Kuffel, High Voltage Engineering: Fundamentals by Elsevier, 2nd Edition.

Reference books:

1. C.L.Wadhwa , High Voltage Engineering by, New Age Internationals (P) Limited, 1997.
2. Ravindra Arora, Wolfgang Mosch, High Voltage Insulation Engineering by, New Age International (P) Limited, 1995.
3. Mazen Abdel Salam, Hussein Anis, Ahdan El-Morshedy, Roshdy Radwan, Marcel DekkerHigh Voltage Engineering, Theory and Practice.

Course Outcomes:

- Able to learn high voltage technology and applications in transformers, rotating machines, circuit breakers and cable power capacitors
- Acquire the knowledge on breakdown in solid, Liquid and gascons dielectrics.
- Able to get the knowledge on generation of high voltage and current and able to measure them.
- Able to nondestructive testing of material and electrical apparatus.
- Get the knowledge on over voltage phenomenon and insulation co-ordination.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(A9228) FLEXIBLE AC TRANSMISSION SYSTEMS (FACTS)
(PROFESSIONAL ELECTIVE-II)

III Year B.Tech. EEE II-Sem

L	T	P	C
3	0	0	3

Pre-Requisites:
Power Electronics
Power System Analysis

Course Objectives:
- To know the concepts and types of FACTS controllers.
- To learn above types of converters.
- To study the various compensation techniques.

UNIT-I: Facts Concepts
Transmission interconnections power flow in an AC system, loading capability limits, dynamic stability considerations, importance of controllable parameters basic types of FACTS controllers, benefits from FACTS controllers.

UNIT-II: Voltage Source Converters
Single phase three phase full wave bridge converters transformer connections for 12 pulse 24 and 48 pulse operation. Three level voltage source converter, pulse width modulation converter, basic concept of current source Converters, and comparison of current source converters with voltage source converters.

UNIT-III: Static Shunt Compensation
Objectives of shunt compensation, mid-point voltage regulation voltage instability prevention, improvement of transient stability, Power oscillation damping, Methods of controllable VAR generation, variable impedance type static VAR generators switching converter type VAR generators hybrid VAR generators.

UNIT-IV: SVC and STATCOM
The regulation and slope transfer function and dynamic performance, transient Stability enhancement and power oscillation damping operating point control and summary of compensator control.

UNIT-V: Static Series Compensators
Concept of series capacitive compensation, improvement of transient stability, power oscillation damping, and functional requirements of GTO thyristor controlled series capacitor (GSC), thyristor switched series capacitor (TSSC), and thyristor controlled series capacitor (TCSC) Control schemes for GSC TSSC and TCSC.

Text books:

1. “Understanding FACTS Devices” N.G. Hingorani and L. Guygi. IEEE Press Publications 2000

Course Outcomes:

The students will be able to know.

- The basic types of controllers and power flow in AC system.
- About Shunt compensation using SVC and STATCOM.
- Concept of GSC ,TCSC & TSSC .

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(A9229) ADVANCED CONTROL SYSTEMS
(PROFESSIONAL ELECTIVE-II)

III Year B.Tech. EEE II-Sem

L	T	P	C
3	0	0	3

Pre-Requisites:
Control Systems
Electrical Circuits-I
Electrical Circuits- II

Course Objectives:
- This course is gives a knowledge of various function analysis phase-plane analysis Stability Analysis.

UNIT – I Describing Function Analysis
Introduction to nonlinear systems, Types of nonlinearities, describing functions, describing function analysis of nonlinear control systems.

UNIT-II Phase-Plane Analysis
Introduction to phase-plane analysis, Method of Isoclines for Constructing Trajectories, singular points, phase-plane analysis of nonlinear control systems.

UNIT-III Stability Analysis
Stability in the sense of Lyapunov, Lyapunov's stability and Lypanov's instability theorems. Direct method of Lypanov for the Linear and Nonlinear continuous time autonomous systems.

UNIT – IV Modal Control
Effect of state feedback on controllability and observability, Design of State Feedback Control through Pole placement. Full order observer and reduced order observer.

Calculus of Variations
Minimization of functionals of single function, Constrained minimization. Minimum principle. Control variable inequality constraints. Control and state variable inequality constraints. Euler Lagrangine
Equation.

UNIT –V Optimal Control
Formulation of optimal control problem. Minimum time, Minimum energy, minimum fuel problems. State regulator problem. Output regulator problem. Tracking problem, Continuous-Time Linear Regulators.

Text books:
1.Modern Control System Theory – by M. Gopal, New Age International Publishers, 2nd edition, 1996

Reference books:

1.Modern Control Engineering – by K. Ogata, Prentice Hall of India, 3rd edition, 1998
2. Control Systems Engineering by I.J. Nagarath and M.Gopal, New Age International (P) Ltd.
3. Digital Control and State Variable Methods – by M. Gopal, Tata Mc Graw-Hill Companies, 1997.
4. Systems and Control by Stainslaw H. Zak, Oxford Press, 2003.

Course Outcomes:

- After completion of this course, the student is able to design the optimal control. With the verification stability analysis.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(A9230) UTILIZATION OF ELECTRICAL ENERGY
(PROFESSIONAL ELECTIVE-III)

III Year B.Tech. EEE II-Sem

L	T	P	C
4	0	0	4

Pre-Requisites:
Applied Physics
Electrical Machines-I
Electrical Machines-II

Course Objective:

- This subject deals with the fundamentals of illumination and its classification and the electric heating and welding.
- It gives the detailed study of all varieties of Electric drives and their application to electrical traction systems.

UNIT-I: Electric Drives
Type of electric drives, choice of motor, starting and running characteristics, speed control, temperature rise, particular applications of electric drives, types of industrial loads, continuous, intermittent and variable loads, load equalization.

UNIT-II: Electric Heating
Advantages and methods of electric heating, resistance heating induction heating and dielectric heating.

Electric Welding
Electric welding, resistance and arc welding, electric welding equipment, comparison between A.C. and D.C. Welding.

UNIT-III: Illumination
Introduction, terms used in illumination, laws of illumination, polar curves, photometry, integrating sphere, sources of light. Various Illumination Methods. Discharge lamps, MV and SV lamps – comparison between tungsten filament lamps and fluorescent tubes, Basic principles of light control, Types and design of lighting and flood lighting.

UNIT-IV: Electric Traction-I
System of electric traction and track electrification. Review of existing electric traction systems in India. Special features of traction motor, methods of electric braking-plugging rheostat braking and regenerative braking.
Mechanics of train movement. Speed-time curves for different services – trapezoidal and quadrilateral speed time curves.

UNIT-V: Electric Traction-II
Calculations of tractive effort, power, specific energy consumption for given run, effect of varying acceleration and braking retardation, adhesive weight and coefficient of adhesion.

Text Book:

1. E. Openshaw Taylor, Utilisation of Electric Energy – by University press.
2. Partab, Art & Science of Utilization of electrical Energy –Dhanpat Rai & Sons.

Reference Books:

1. N.V.Suryanarayana, Utilization of Electrical Power including Electric drives and Electric traction, New Age International (P) Limited, Publishers, 1996.
2. C.L. Wadhwa, Generation, Distribution and Utilization of electrical Energy, New Age International (P) Limited, Publishers, 1997.

Course Outcomes:

- Implementation of knowledge of drives to real world problems.
- An ability to function effectively in industry related to drives.
- Ability to apply the technical knowledge in electric traction and application involved in motion control.
- Ability to work in industry related to lightening.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(A9231) HVDC TRANSMISSION
(PROFESSIONAL ELECTIVE-III)

III Year B.Tech. EEE II-Sem

L	T	P	C
4	0	0	4

Pre-Requisites:
Electrical Circuits-II
Power Electronics
Power Systems-I
Power Systems-II

Course Objectives:

- To impart the students with different technologies available for High Voltage Power System
- Different control strategies for efficient operation of the power system under normal and abnormal conditions.

UNIT – I: Basic Concepts
Economics & Terminal equipment of HVDC transmission systems: Types of HVDC Links – Apparatus required for HVDC Systems – Comparison of AC & DC Transmission, Application of DC Transmission System – Planning & Modern trends in D.C. Transmission. Brief discussion on role of HVDC Technology in Indian Power Sector.

UNIT – II: Analysis of HVDC Converters
Choice of Converter configuration – analysis of Graetz – characteristics of 6 Pulse & 12 Pulse converters – Cases of two 3 phase converters in star – star mode – their performance.

Converter & HVDC system control:
Principle of DC Link Control – Converters Control Characteristics – Firing angle control – Current and extinction angle control – Effect of source inductance on the system; Starting and stopping of DC link; Power Control.

UNIT – III: Reactive Power Control in HVDC
Reactive Power Requirements in steady state-Conventional control strategies-Alternate control strategies-sources of reactive power-AC Filters – shunt capacitors-synchronous condensers.

Power Flow Analysis in AC/DC Systems
Modeling of DC Links - DC Network - DC Converter - Controller Equations - Solution of DC load flow – P.U. System for D.C quantities - solution of AC - DC Power flow-Simultaneous method - Sequential method.

UNIT-IV: Converter Fault & Protection
Converter faults – protection against over current and over voltage in converter station – surge arresters – smoothing reactors – DC breakers –Audible noise-space charge field-corona effects on DC lines-Radio interference.

UNIT – V: Harmonics
Generation of Harmonics –Characteristics harmonics, calculation of AC Harmonics, Non-Characteristics harmonics, adverse effects of harmonics – Calculation of voltage & Current harmonics – Effect of Pulse number on harmonics
Filters: Types of AC filters, Design of Single tuned filters –Design of High pass filters.

Text books:

1. K.R. Padiyar –"HVDC Power Transmission Systems: Technology and system Interactions" – New Age International (P) Limited, and Publishers.
2. S.S.Rao—"EHVAC and HVDC Transmission Engineering and Practice"
3. Prabha Kundur- "Power System Stability and Control" TMH edition-2004

Reference books:

1. E.W.Kimbark –"HVDC Transmission –Direct Current Transmission "– John Wiley & Sons.
2. E.Uhlmann –"Power Transmission by Direct Current" – B.S.Publications.

Course Outcomes:

After completion of this Course, the student will be able to

- Understand the complete operation of HVDC Converter stations.
- Understand the power flow control on HVDC Transmission system.
- Understand the Operation of the controller for HVDC in worst and normal operations.
- Design the Various filters.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(A9464)VLSI TECHNOLOGY & DESIGN
(DEPARTMENTAL ELECTIVE-II)

III Year B.Tech. EEE II-Sem

L	T	P	C
4	1	0	4

Pre Requisites: STLD
PDLIC

Course Objectives

Give exposure to different steps involved in the fabrication of ICs using MOS transistor, CMOS/BICMOS transistors and passive components.

- Explain electrical properties of MOS and BICMOS devices to analyze the behavior of inverters designed with various loads.
- Give exposure to the design rules to be followed to draw the layout of any logic circuit.
- Provide concept to design different types of logic gates using CMOS inverter and analyze their transfer characteristics. Provide design concepts to design building blocks of data path of any system using gates.
- Understand basic programmable logic devices and testing of CMOS circuits.

UNIT –I:

Introduction: Introduction to IC Technology – MOS, PMOS, NMOS, CMOS & BiCMOS

Basic Electrical Properties: Basic Electrical Properties of MOS and BiCMOS Circuits: I_{ds}-V_{ds} relationships, MOS transistor threshold Voltage, g_m, g_{ds}, Figure of merit ωo; Pass transistor, NMOS Inverter, Various pull ups, CMOS Inverter analysis and design, Bi-CMOS Inverters.

UNIT -II:VLSI Circuit Design Processes: VLSI Design Flow, MOS Layers, Stick Diagrams, Design Rules and Layout, 2 μm CMOS Design rules for wires, Contacts and Transistors Layout Diagrams for NMOS and CMOS Inverters and Gates.

UNIT –III:Gate Level Design: Logic Gates and Other complex gates, Switch logic, Alternate gate circuits, Time delays, Driving large capacitive loads, Wiring capacitance, Fan – in, Fan – out, Choice of layers.

UNI -IV: Programmable Logic Devices: PLAs, FPGAs, CPLDs, Standard Cells, Programmable Array Logic, Design Approach, Parameters influencing low power design.

UNI –V: CMOS Testing: CMOS Testing, Need for testing, Test Principles, Design Strategies for test, Chip level Test Techniques.

Text books:

1. Essentials of VLSI circuits and systems – Kamran Eshraghian, Eshraghian Dougles and A. Pucknell, PHI, 2005 Edition
2. CMOS VLSI Design – A Circuits and Systems Perspective, Neil H. E Weste, David Harris, Ayan Banerjee, 3rd Ed, Pearson, 2009.
3. VLSI Design – M. Michael Vai, 2001, CRC Press.

Reference books:

1. Introduction to VLSI Systems: A Logic, Circuit and System Perspective – Ming-BO Lin, CRC Press, 2011
2. CMOS logic circuit Design - John .P. Uyemura, Springer, 2007.
3. Modern VLSI Design - Wayne Wolf, Pearson Education, 3rd Edition, 1997.
4. VLSI Design- K .Lal Kishore, V. S. V. Prabhakar, I.K International, 2009.
5. Introduction to VLSI – Mead & Convey, BS Publications, 2010.

Course Outcomes

Upon successfully completing the Course, the student should be able to:

- Acquire qualitative knowledge about the fabrication process of integrated circuit using MOS transistors,
- Choose an appropriate invert depending on specifications required for a circuit
- Draw the layout of any logic circuit which helps to understand and estimate parasitic of any logic circuit
- Design different types of logic gates using CMOS inverter and analyze their transfer characteristics.
- Design simple circuit using PLA, PAL, FPGA and CPLD.
- Understand different types of faults that can occur in a system and learn the concept of testing and adding extra hardware to improve testability of system.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(A9021) ADVANCED ENGLISH LANGUAGE AND COMMUNICATION SKILLS LAB

III Year B.Tech. Mech. Engg. & EEE II-Sem

L	T	P	C
0	0	3	2

Prerequisites: **ENGLISH LANGUAGECOMMUNICATION SKILLS LAB**

Introduction

The introduction of the Advanced English Communication Skills Lab is considered essential at 3rd year level. At this stage, the students need to prepare themselves for their careers which may require them to listen to, read, speak and write in English both for their professional and interpersonal communication in the globalised context.
The proposed course should be a laboratory course to enable students to use 'good' English and perform the following:

- Gathering ideas and information to organize ideas relevantly and coherently.
- Engaging in debates.
- Participating in group discussions.
- Facing interviews.
- Writing project/research reports/technical reports.
- Making oral presentations.
- Writing formal letters.
- Transferring information from non-verbal to verbal texts and vice-versa.
- Taking part in social and professional communication.

COURSE OBJECTIVES:

This Lab focuses on using multi-media instruction for language development to meet the following targets:

- To improve the students' fluency in English, through a well-developed vocabulary and enable them to listen to English spoken at normal conversational speed by educated English speakers and respond appropriately in different socio-cultural and professional contexts.
- Further, they would be required to communicate their ideas relevantly and coherently in writing.
- To prepare all the students for their placements.

3. Syllabus:

The following course content to conduct the activities is prescribed for the Advanced English Communication Skills (AECS) Lab:

1. **Fundamentals of Inter-personal Communication and Building Vocabulary** - Starting a conversation – responding appropriately and relevantly – using the right body language – Role Play in different situations and Discourse Skills- using visuals - Synonyms and

antonyms, word roots, one-word substitutes, prefixes and suffixes, study of word origin, business vocabulary, analogy, idioms and phrases, collocations and usage of vocabulary.

2. **Reading Comprehension** –General Vs Local comprehension, reading for facts, guessing meanings from context, scanning, skimming, inferring meaning, critical reading & effective googling.

3. **Writing Skills** – Structure and presentation of different types of writing – *letter writing/Resume writing/ e-correspondence/ Technical report writing/ Portfolio writing* – planning for writing – improving one's writing.

4. **Presentation Skills** – Oral presentations (individual and group) through JAM sessions/seminars/**PPTs** and written presentations through posters/projects/reports/ e-mails/assignments etc.

5. **Group Discussion and Interview Skills** – Dynamics of group discussion, intervention, summarizing, modulation of voice, body language, relevance, fluency and organization of ideas and rubrics for evaluation- Concept and process, pre-interview planning, opening strategies, answering strategies, interview through tele-conference and video-conference and Mock Interviews.

4. Minimum Requirement:

The Advanced English Communication Skills (AECS) Laboratory shall have the following infra-structural facilities to accommodate at least 35 students in the lab:

- Spacious room with appropriate acoustics
- Round Tables with movable chairs
- Audio-visual aids
- LCD Projector
- Public Address system
- P – IV Processor, Hard Disk – 80 GB, RAM–512 MB Minimum, Speed – 2.8 GHZ
- T. V, a digital stereo & Camcorder
- Headphones of High quality

5. Prescribed Lab Manual: A book titled ***A Course Book of Advanced Communication Skills Lab*** published by Universities Press, Hyderabad.

6. Suggested Software:

The software consisting of the prescribed topics elaborated above should be procured and used.

- 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)
- The following software from 'train2success.com'
  - Preparing for being Interviewed
  - Positive Thinking
  - Interviewing Skills
  - Telephone Skills
  - Time Management
  - Skillmate

- Presentation skills, Cambridge (with VCD)

7. Books Prescribed:

1. **Technical Communication** by Meenakshi Raman & Sangeeta Sharma, Oxford University Press 2009.
2. **English Language Communication : A Reader cum Lab Manual** Dr A Ramakrishna Rao, Dr G Natanam & Prof SA Sankaranarayanan, Anuradha Publications, Chennai 2008.
3. **Advanced Communication Skills Laboratory Manual** by Sudha Rani, D, Pearson Education 2011.
4. **Technical Communication** by Paul V. Anderson. 2007. Cengage Learning pvt. Ltd. New Delhi.
5. **Business and Professional Communication:** Keys for Workplace Excellence. Kelly M. Quintanilla & Shawn T. Wahl. Sage South Asia Edition. Sage Publications. 2011.

Suggested Books:

1. **The Basics of Communication: A Relational Perspective**. Steve Duck & David T. McMahan. Sage South Asia Edition. Sage Publications. 2012.
2. **English Vocabulary in Use** series, Cambridge University Press 2008.
3. **Management Shapers Series** by Universities Press(India)Pvt Ltd., Himayatnagar, Hyderabad 2008.
4. **Handbook for Technical Communication** by David A. McMurrey & Joanne Buckley. 2012. Cengage Learning.
5. **Communication Skills** by Leena Sen, PHI Learning Pvt Ltd., New Delhi, 2009.
6. **Handbook for Technical Writing** by David A McMurrey & Joanne Buckely CENGAGE Learning 2008.
7. **Job Hunting** by Colm Downes, Cambridge University Press 2008.
8. **Master Public Speaking** by Anne Nicholls, JAICO Publishing House, 2006.
9. **English for Technical Communication for Engineering Students, Aysha Vishwamohan, Tata Mc Graw-Hil 2009.**
10. Books on **TOEFL/GRE/GMAT/CAT/ IELTS** by Barron's/DELTA/Cambridge University Press.
11. **International English for Call Centres** by Barry Tomalin and Suhashini Thomas, Macmillan Publishers, 2009.
12. **Towards Career Advancement** - Excerpts from a Professor's Folio by **P. Satyanarayana Prof. of English, Vaagdevi College of Engineering** , published by Vaagdevi Group of Colleges Engineering , Warangal (T.S.) India, 2015.

COURSE OUTCOMES

- Developing sound vocabulary and its proper use contextually.
- Inculcating flair for Writing and felicity in written expression.
- Enhancing job prospects.
- Acquiring effective speaking abilities

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(A9232) CONTROL SYSTEMS LAB

III Year B.Tech. EEE II-Sem

L	T	P	C
0	0	3	2

Pre-Requisites:
Control Systems

Course Objectives:
- This course introduces the time domain specifications and analysis of various systems
- Design of various time domain controllers and frequency domain compensators
- Performance study of the systems with and without controllers and comparison.

List of Experiments:
1. Time response of Second order system
2. Characteristics of Synchros
3. Programmable Logic Controller – Study and verification of truth tables of logic gates, simple Boolean expressions and application of speed control of motor.
4. Effect of feedback on DC Servo Motor
5. Transfer function of DC Motor
6. Effect of P, PD, PI, PID Controller on a second order systems
7. Lag and Lead Compensation – Magnitude and Phase plot
8. Transfer function of DC Generator
9. Temperature Controller using PID
10. Characteristics of Magnetic Amplifiers
11. Characteristics of AC Servo Motor

Note: Minimum TEN experiments are to be conducted

Course Outcomes:
- Analyze the time & Frequency response of control systems
- Analyze performance of feedback control systems.
- Analyze the response of PID controllers.
- Performance of PLC's and its applications.
- Performance of AC & DC servo motors

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(A9233) POWER ELECTRONICS & DRIVES LAB

III Year B.Tech. EEE II-Sem

L	T	P	C
0	0	3	2

Pre-Requisites:
Power Electronics
Electrical Machines-I
Electrical Machines-II

Course Objectives:

- This course introduces the basic concept of powers semiconductor devices.
- This course introduces working of all the types of converters and analysis.
- Performance and control of DC and AC Motors with power electronic converters.

List of Experiments

1. Study of Characteristics of SCR, MOSFET & IGBT.
2. Gate firing circuits for SCR's.
3. Single Phase AC Voltage Controller with R and RL Loads.
4. Single Phase fully controlled bridge converter with R and RL loads.
5. Forced Commutation circuits (Class A, Class B, Class C, Class D & Class E).
6. Single Phase Cycloconverter with R and RL loads.
7. Single Phase Parallel Inverter with R & RL Loads.
8. Single Phase half controlled converter with R load.
9. Three Phase half controlled bridge converter with R-load.
10. Thyristorised drive for PMDC Motor with closed loop control.
11. Speed control of 3 phase wound rotor Induction Motor.
12. Single phase Dual Converter with R & RL Loads.
13. Operation of MOSFET based Chopper.

Note: Minimum TEN experiments are to be conducted

Course Outcomes: At the end of the course the students would be able to

- Study of Characteristics of various Power Semiconductor devices
- Design Gate firing and Commutation Circuits.
- Understand the behavior of various motors with the power electronic converters.
- Understand types of Power Electronic converters and identify their applications.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(A9018) LOGICAL REASONING AND QUANTITATIVE APTITUDE

III Year B.Tech. EEE II-Sem

L	T	P	C
2	0	0	0

Pre-Requisites: None

Course Objectives:

The purpose of this course ensure the students

- To improve logical thinking with general applications using mathematical concepts like sequences, series, number theory and probability.
- It also features students to analyze data interpretation and able of improve their mathematical skills in various general aspects like coding and decoding, Time and Work puzzles solving blood relations etc.

Unit – I Logical Reasoning

1. Coding and Decoding
2. Distance and Directions
3. Classifications
4. Odd man out and series
5. Clocks and Calendars etc.

Unit – II Logical ability

1. Blood relations
2. Seating Arrangements
3. Figure Analysis
4. Puzzles etc.

Unit – III Number systems

1. LCM and HCF
2. Ratio and proportion
3. Simple interest and compound interest
4. Profit and Loss etc.

Unit – IV Arithmetic ability

1. Time and work
2. Partnerships
3. Time speed and distance
4. Problems on Trains etc.

Unit – V Mathematical ability

1. Sequence and series
2. Permutations and combination
3. General probability etc.

Text Books:

1. A modern approach to verbal and non-verbal reasoning by Dr. R.S. Aggarwal.
2. Objective Arithmetic by S.L. Gulati.

Reference Books:

1. Quantitative Aptitude by Abhijit Guha Tata Mc Graw-Hill Company Limited.
2. Quantitative Aptitude by P.A.Anand(Wiley)
3. Quantitative Aptitude by Dr. R.S. Aggarwal.

Course Outcomes:

By studying logical reasoning and quantitative aptitude students are able

- To improve their logical thinking in terms of general and mathematical concepts.
- The main outcome is to improve students to compete in academic as well as competitive levels through which students are able to solve the real world problems.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(A9465) MICROPROCESSORS AND MICROCONTROLLERS ARCHITECTURE AND PROGRAMMING

IV Year B.Tech. EEE I-Sem

L	T	P	C
3	1	0	3

Prerequisites: Switching Theory and Logic Design

Course Objectives:
The course objectives are:

- To Develop an In-Depth Understanding of the Operation of Microprocessors and Microcontrollers, Machine Language Programming & Interfacing Techniques.

Unit I Architecture of Microprocessors
(Description) General Definitions of Mini Computers, Microprocessors, Micro Controllers and digital signal processors. Overview of 8085 Microprocessor. Overview of 8086 Microprocessor. Signals and Pins of 8086 Microprocessor. Physical Memory Organization, General Bus Operation.

Unit II Assembly language of 8086
(Description) Machine Language Instruction Format, Addressing Modes, Assembler Directives and Operators, Data Types, Instructions and Programming, Assembly Software Programs with Algorithms

Unit III Interfacing with 8086
(Description) Interfacing with RAMs, ROMs Along with the Explanation of Timing Diagrams. Interfacing with Peripheral ICs like 8255, 8254, 8279, 8259 etc.

Unit IV Introduction to Microcontrollers: Overview of 8051 Microcontroller, Architecture, Input Ports, Memory Organization, Addressing Modes and Instruction Set of 8051, Simple Programs

Unit V 8051 Real time control: Programming Timer Interrupts, Programming External Hardware Interrupts, Programming the Serial Communication Interrupts, Programming 8051 Timers and Counters.

Text Books:

3. D. V. Hall, Microprocessors and Interfacing, TMGH, 2nd Edition 2006
4. Kenneth. J. Ayala, the 8051 Microcontroller, 3rd ed., cengage Learning.

References:

1. Ramesh S.Gaonkar, “Microprocessor - Architecture, Programming and Applications with the 8085”, Penram International Publishing Private Limited, Fifth Edition.
2. Doughlas V Hall, “Digital Systems and Microprocessors”, McGraw Hill. 3rd Edition 2003
3. A.K. Ray & K.M.Bhurchandi, “Advanced Microprocessors and peripherals-Architectures, Programming and Interfacing”, TMH, 2002 Reprint.
4. Mohamed Ali Mazidi, Janice Gillispie Mazidi, “The 8051 Microcontroller and Embedded Systems”, Pearson Education, 2004.

Course Outcomes:

Upon Completion of the Course:

- The Student Will Learn the Internal Organization of Popular 8086/8051 Microprocessors/Microcontrollers.
- The Student Will Learn Hardware And Software Interaction And Integration.
- The Students Will Learn The Design Of Microprocessors Microcontrollers – Based Systems.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(A9234) SWITCH GEAR AND PROTECTION

IV Year B.Tech. EEE I-Sem

L	T	P	C
4	0	0	4

Pre-Requisites:
Applied Physics
Engineering Chemistry
Power Systems-I
Power Systems- II

Course Objective:

- This Course introduces All Varieties of Circuit Breakers and Relays for protection of Generators, Transformers and feeder bus bars from over voltages and other hazards.
- It Emphasis on Overall Protection of Power System from making to Applications.

UNIT – I: Introduction to Circuit Breakers
Circuit Breakers: Elementary principles of Arc Interruption, Arc Phenomena, Restriking Voltage and Recovery voltages. - Restriking Phenomenon, Average and Max. RRRV, Numerical Problems - Current Chopping and Resistance Switching - CB Ratings and Specifications: Types and Numerical Problems. – Auto Reclosures. Description and Operation of following types of circuit breakers: Minimum Oil Circuit breakers, Air Blast Circuit Breakers, Vacuum and SF6 circuit breakers.

UNIT – II: Electromagnetic and Static Relays
Principle of Operation and Construction of Attracted armature, Balanced Beam, Induction Disc and Induction Cup relays. Types of Over Current Relays: Instantaneous, DMT and IDMT types. Application of relays: Over Current/ Under Voltage Relays, Direction Relays, Differential Relays and Percentage Differential Relays. Universal torque equation, Distance relays: Impedance, Reactance and Mho and Off-Set Mho relays, Characteristics of Distance Relays and Comparison. Static Relays: Static Relays verses Electromagnetic Relays. Introduction to Numerical Relays.

UNIT – III: Protection of Power Equipment
Protection of generators against Stator faults, Rotor faults, and Abnormal Conditions. Restricted Earth fault and Inter-turn fault Protection. Numerical Problems on % Winding Unprotected. Protection of transformers: Percentage Differential Protection, Numerical Problem on Design of CT s Ratio, Buchholtz relay Protection. Protection of Lines: Over Current, Carrier Current and Three-zone distance relay protection using Impedance relays. Translay Relay. Protection of Bus bars – Differential protection.

UNIT – IV Neutral Grounding
Grounded and Ungrounded Neutral Systems:- Effects of Ungrounded Neutral on system performance, Arcing Grounds Methods of Neutral Grounding: Solid, Resistance, Reactance – Peterson Coil, voltage Transformer Earthing and Grounding Practices, Grounding Transformers (Star-Delta and Zig-Zag).

UNIT – V Protection against Over voltages
Generation of Over Voltages in Power Systems.-Protection against Lightning Over Voltages - Valve type and Zinc-Oxide Lighting Arresters - Insulation Coordination -BIL, Impulse Ratio, Standard Impulse Test Wave, Volt-Time Characteristics.

Text Books:

1. Badri Ram, D.N Viswakarma, Power System Protection and Switchgear, TMH Publications. 2nd editon
2. Sunil S Rao, Switchgear and Protection – Khanna Publlishers.
3. C.L.Wadhwa, Electrical Power Systems –New Age international (P) Limited, Publishers, 3rd editon.

Reference Books:

1. Paithankar and S.R.Bhide, Fundamentals of Power System Protection, PHI, 2003.
2. C R Mason, Art & Science of Protective Relaying – Wiley Eastern Ltd.
3. B.L.Soni, Gupta, Bhatnagar, Chakrabarthy, A Text book on Power System Engineering, Dhanpat Rai **&** Co.

Course Outcomes:

- Students are will be able to analyse the in depth of are physics material and their nature and their correction with power systems.
- They will be able to understand the phenomenon beyond the making of switch gear and protection assesses the curve and effect relationship in making belay & circuit breakers.
- Classification of various protection schemes and their corresponding protection equipment will be analysed.
- /they will be able to assess the rating, type, scheme, apparatus for a specific problem with relevant switch gear and protection analysis.
- They will have and overall knowledge of relay circuits between and may other protection equipment their range and application in field of power systems.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(A9511) DATABASE MANAGEMENT SYSTEMS
(OPEN ELECTIVE-II)

IV Year B.Tech. (EEE) I Semester **L T P C**
3 0 0 3

Pre-Requisites: None

Course Objectives:

This Course provides an emphasis on how to organize, maintain and retrieve information efficiently and effectively from a Database and it presents an introduction to database management systems (DBMS) and relational data model. Also the course introduces the concepts of transactions and transaction processing and the issues and techniques relating to concurrency and recovery in multi-user database environments

.

UNIT-I

Introduction - Database system Applications - Database System versus File Systems - View of Data– Instances and schema - Data Models - Database Languages -DDL-DML - Database Users and Administrator –Transaction Management - Database System Structure-Application Architectures – History of Database Systems.**(Chapter 1:-Refer Pg.No 1-21)**

UNIT-II

Database Design and ER model – Basic concepts - Entity sets and Relationship Sets – Constraints - Keys - Design Issues - Entity-Relationship Diagram- Weak Entity Sets - Extended E-R Features - Designing of an E-R Database Schema-Reduction of an E-R Schema to Tables.

(Chapter 2:-Refer Pg.No 27-68)

UNIT – III

Introduction to the Relational Model – Structure of Relational Databases - Relational Algebra –Relational Calculus – Domain relational Calculus , Touple Relational Calculus - Integrity and Security –Domain Constraints ,Referential Integrity Constraints-Triggers-security and Authorization – SQL- Basic Structure, Set operations ,Aggregate Operations –Null values-Nested Sub queries – Views –Modification of Database- Joined relations ,Data Definition Language, Embedded SQL, Dynamic SQL. **(Chapter 3:-Refer Pg.No 79-122,Chapter 6:-Refer Pg.No 222-248, Chapter 4:-Refer Pg.No 135-180)**

UNIT – IV

First Normal Form ,Pitfalls in Relational Database Design-Functional Dependencies– Decomposition – Desirable properties of Decomposition – Boyce-Codd Normal Form — Third Normal Form- Fourth Normal Form. Transactions-Transaction Concept- Transaction state- Implementation of atomicity and Durability- Concurrent Executions – Serializability, Recoverability-Implementation of Isolation **(Chapter 7:-Refer Pg.No 257-293,Chapter 15:-Refer Pg.No 565-584)**

UNIT-V

Concurrency Control-Lock Based Protocols, Timestamp Based Protocols, Validation Based Protocols, Multiple Granularity, Dead Lock Handling-Recovery System – Failure Classification, Storage Structure , Recovery and Atomicity, Log Based recovery ,Shadow Paging, Recovery with concurrent transactions.

Storage and File Structure - File Organization – Organization of records in file - Data Dictionary Storage – Indexing and Hashing – Basic Concepts , Ordered Indices, B+Tree Index files, B- tree index files – Static Hashing – Dynamic Hashing – Comparison of Indexing and Hashing.

Chapter 16:-Refer Pg.No 591-620,Chapter 17:-Refer Pg.No 639-660, Chapter 11:-Refer Pg.No 415-428, Chapter 12:-Refer Pg.No 445-480)

Text Books.

1. Database System Concepts, Silberschatz, Korth , Fourth Edition, McGraw hill (Chapters 1,2 excluding 2.10,3,4 excluding 4.8,4.14,6 excluding 6.6, 6.7,7 excluding 7.9, 7.10,11 excluding 11.1 to 11.5,12 excluding 12.8, 12.9, 15 excluding 15.8, 15.9, 16 excluding 16.5, 16.7, 17 excluding 17.7 to 17.10).

References :

1. Fundamentals of Database Systems, Elmasri Navrate Pearson Education
2. Database Management Systems, Raghuramakrishnan, Johannes Gehrke, TATA Mc Graw Hill
3. Data base Systems design, Implementation, and Management, Peter Rob & Carlos Coronel 7th Edition.

Course Outcomes:

- A strong foundation in core Computer Science and Engineering, both theoretical and applied concepts.
- An ability to apply knowledge of mathematics, science, and engineering to real-world problems.
- Ability to model, understand, and develop complex software for system software as well as application software.
- An ability to communicate effectively, both in writing and oral.
- The broad education necessary to understand the impact of computer science and engineering solutions in the scientific, societal and human contexts.
- A recognition of the need for, and an ability to engage in life-long learning.
- A knowledge of contemporary issues.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(A9571) ADVANCED JAVA
(OPEN ELECTIVE-II)

IV Year B.Tech. EEE I Semester **L T P C**
3 0 0 3

PreRequisites: (A9570) CORE JAVA

Course Objectives: The goal of this course is to equip students with advanced design and programming techniques in the object-oriented programming paradigms. To this end, specific objectives are to increase student's knowledge of object-oriented design concepts. To get knowledge and skills needed to develop reusable, quality programs. To instruct students on the use of object-oriented design tools for modeling problem solutions and complex systems. And to increase student's proficiency in programming in object-oriented environments.

UNIT-I
Applets: Inheritance hierarchy for applets, differences between applets and applications, Life Cycle of an applet, passing parameters to applets, applet security issues

UNIT-II
GUI Programming with Java- The AWT class Hierarchy, Introduction to Swing, Swing vs. AWT, Hierarchy for Swing Components, Containers- JFrame, JApplet, JDialog, JPanel, Overview of some swing components- JButton, JLabel, JTextField, JTextArea, simple swing applications, Layout Management-Layout manager types-border, grid and flow.
Event Handling- Events, Event Sources, Event classes, Event Listeners, Relationship between Event sources and Listeners, Delegation event model, Examples: handling a button click, handling mouse events, Adapter classes.
.
UNIT-III
Connecting to Data Base- JDBC Type 1 to 4 drivers, connecting to a data base, querying a data base and processing the results, updating data with JDBC.

UNIT-IV
Servlets: Introduction, Overview of Servlet Technology, Downloading the Java Servlet Development Kit, Handling HTTP GET requests, Handling HTTP POST requests, Session Tracking, Multi tier Applications: Using JDBC from a Servlet, Electronic Commerce, Servlet Internet and World Wide Web Resources, Understanding MVC Architecture

UNIT-V
Java Server Pages (JSP): Advantages of JSP over Servlet, Anotomy of JSP, Defining each element of JSP, Custom Tag Library, Error Handling in JSP, working with JDBC.

Text Books

1. JAVA How to Programming by DIETEL & DIETEL.

Reference Books

1. Java Server Pages- Hibert Schiltz.
2. HTML Black book- 1st Edition by Steven Holzner.

Course Outcomes (COs):

CO-1. A strong foundation in core Computer science and engineering, both theoretical and applied concepts.
CO-3. Ability to model, understand and develop complex software for System Software as well as Application Software.
CO-4. An ability to function effectively within team.
CO-6. An ability to communicate effectively, both in writing and oral.
CO-7. The board education necessary to understand the impact of computer science and engineering solutions in the scientific, societal and human context.
CO-8. Recognition of the need for, an ability to engage in life-long learning.

Learning Outcomes (Los):

Upon successful completion of course students would be able to learn

1. **Knowledge and understanding**- They can understand some advanced programming concepts to deal with complex data objects as whole entities, rather than by twiddling with their elements.
2. **Cognitive skills**- They can reformulate given a problem and write large programs, by analyzing the original problem, and can determine which problem elements to represent as objects or functions.
3. **Communication skills**- They can write the simplest possible program that solves a given problem while explaining to the reader how it solves that problem.
4. **Practical and subject specific skills** – They can effectively use parameterization and inheritance to promote reuse, Develop programs with networking, Compose more complex programs from simpler parts.

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VAAGDEVI COLLEGE OF ENGINEERING
AUTONOMOUS

(A9622) MANAGEMENT SCIENCE
(OPEN ELECTIVE-I)

IV - I B.Tech. EEE **L T P C**
3 0 0 3

Pre requisites: None

Objectives: This course is intended to familiarize the students with the framework for the managers and leaders available for understanding and making decisions relating to issues related organisational structure, production operations, marketing, human resource management, product management and strategy.

UNIT - I:

Introduction to Management and Organisation: Concepts of Management and organization- nature, importance and Functions of Management, Systems Approach to Management - Taylor's Scientific Management Theory- Fayal's Principles of Management- Maslow's theory of Hierarchy of Human Needs- Douglas McGregor's Theory X and Theory Y - Hertzberg Two Factor Theory of Motivation - Leadership Styles, Social responsibilities of Management, Designing Organisational Structures: Basic concepts related to Organisation - Departmentation and Decentralisation, Types and Evaluation of mechanistic and organic structures of organisation and suitability.

UNIT - II:

Operations and Marketing Management: Principles and Types of Plant Layout-Methods of Production(Job, batch and Mass Production), Work Study - Basic procedure involved in Method Study and Work Measurement - Business Process Reengineering(BPR) - Statistical Quality Control: control charts for Variables and Attributes (simple Problems) and Acceptance Sampling, TQM, Six Sigma, Deming's contribution to quality, Objectives of Inventory control, EOQ, ABC Analysis, Purchase Procedure, Stores Management and Store

Records - JIT System, Supply Chain Management, Functions of Marketing, Marketing Mix, and Marketing Strategies based on Product Life Cycle, Channels of distribution.

UNIT - III:

Human Resources Management(HRM): Concepts of HRM, HRD and Personnel Management and Industrial Relations (PMIR), HRM vs PMIR, Basic functions of HR Manager: Manpower planning, Recruitment, Selection, Training and Development, Placement, Wage and Salary Administration, Promotion, Transfer, Seperation, Performance Appraisal, Grievance Handling and Welfare Administration, Job Evaluation and Merit Rating - Capability Maturity Model (CMM) Levels - Performance Management System.

UNIT - IV:

Project Management (PERT/ CPM): Network Analysis, Programme Evaluation and Review Technique (PERT), Critical Path Method (CPM), Identifying critical path, Probability of Completing the project within given time, Project Cost Analysis, Project Crashing (simple problems).

UNIT - V:

Strategic Management and Contemporary Strategic Issues: Mission, Goals, Objectives, Policy, Strategy, Programmes, Elements of Corporate Planning Process, Environmental Scanning, Value Chain Analysis, SWOT Analysis, Steps in Strategy Formulation and Implementation, Generic Strategy alternatives. Bench Marking and Balanced Score Card as Contemporary Business Strategies.

TEXT BOOKS:

1. Aryasri: Management Sciences, 2/e, TMH, 2005.
2. Stoner, Freeman, Gilbert, Management, 6th Ed, Pearson Education, New Delhi, 2004.
3. P. Vijay Kumar, N. Appa Rao and Ashnab, Chnalill, Cengage Learning India, 2012.

REFERENCE BOOKS:

1. Kotler Philip and Keller Kevin Lane: Marketing Management, Pearson, 2012.
2. Koontz and Weihrich: Essentials of Management, McGraw Hill, 2012.
3. Thomas N. Duening and John M. Ivancevich Management - Principles and Guidelines, Biztantra, 2012.
4. Kanishka Bedi, Production and Operations Management, Oxford Uiversity Press, 2012.
5. Samuel C. Certo: Modern Management, 2012.
6. Schermerhorn, Capling, Poole and Wiesner: Management, Wiley, 2012.
7. Parnell: Strategic Management, Cengage, 2012.
8. Lawrence R Jauch, R. Gupta and William F. Glueck: Business Policy and Strategic Management Science, McGraw Hill, 2012.

Outcomes:

By the end of the course, the student will be in a position to

- Plan an organizational structure for a given context in the organization carry out production operations through Work study.
- Carry out production operations through Work study.
- Understand the markets, customers and competition better and price the given products appropriately.
- Ensure quality for a given product or service.
- Plan and control the HR function better.
- Plan, schedule and control projects through PERT and CPM.
- Evolve a strategy for a business or service organization.

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VAAGDEVI COLLEGE OF ENGINEERING

(AUTONOMOUS)

(A9235) COMPUTER METHODS IN POWER SYSTEMS

(PROFESSIONAL ELECTIVE –IV)

IV Year B.Tech. EEE I-Sem

L	T	P	C
3	0	0	3

Pre requisites:

Computational Mathematics,
Electrical circuits-II,
Power Systems-II

Course Objective:

- This Course is designed to give students the required knowledge for the design and analysis of electrical power system.
- Calculation of power flow in a power system network using various techniques, formation of Y_{bus}, Z_{bus} and its importance are covered in this course. It also Deals with analysis of transient stability.

UNIT I Network Topology

Incidence and network matrices: Introduction, graphs, incidence matrices, primitive matrices, types of network matrices, formation of network matrix, π- representation of off-nominal tap transformers, Y-bus formation by singular transformation, examples of formation of incidence matrices, formation of Ybus by inspection method.

UNIT II Analysis Of Faulted Power System

Algorithms for formation of Z-bus matrix: Step by Step algorithm for formation of Z- bus. Modification of Z-bus matrix for changes in the network, numerical Problems. Short circuit analysis of large power systems using Z bus, analysis of open circuit faults.

UNIT III Power Flow Analysis

Introduction, sparsity technique for Ybus , power flow solution algorithms, Gauss-Seidal method , Newton Raphson load flow method, Fast decoupled load flow method and dc load flow method, numerical examples.

UNIT IV Security and Contingency Analysis

Introduction, factors affecting power system security, contingency analysis-linear sensitivity factors , contingency selection.

UNIT V Stability Analysis

Classification of power system stability, classical model of synchronous machines (SMIB) - excitation and power system stabilizer(PSS) representation. Numerical integration methods -Runge Kutta fourth order methods and modified Euler's method. Transient stability algorithm using modified Euler's method and fourth order Runge Kutta method.

Text Books:

1.Computer Techniques in Power System Analysis, Pai, M. A-TMH Publishers, 2nd edition, 2006.
2.K.U.Rao: Computer Techniques and Models in Power Systems, I.K.International Pvt.Ltd.
3.Modern Power System Analysis, Nagrath, I. J., and Kothari, D. P, TMH,4th edition, 2003.

Reference Books:

1. Advanced Power System Analysis and Dynamics, Singh, L. P, New Age International (P) Ltd, New Delhi, 2001, 5th Edition.
2. Power System Analysis, Haadi Sadat, TMH, 2nd Edition, 4th edition, 2007

Course Outcomes:

After completing this course, student is able to

- Analyze fault using Z-bus.
- Develop computer programs for different load flow techniques.
- Analyze security of the power system.
- Perform stability analysis of power system.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(A9236) LINEAR SYSTEMS ANALYSIS
(PROFESSIONAL ELECTIVE –IV)

IV Year B.Tech. EEE I-Sem

L	T	P	C
3	0	0	3

Pre requisites:
Electrical Circuits-I
Electrical Circuits-II
Control Systems

Course Objectives:
The students acquire and develop the thinking skills and enable them to:

- Apply appropriate techniques to the various Linear circuits.
- Analyze, Design and identify the specifications of typical circuits.
- Solve various numerical problems.

UNIT-I State Variable Analysis
Choice of state variables in Electrical networks-Formulation of state equations for Electrical networksEquivalent source method.Network topological method - Solution of state equations-Analysis of simple networks with state variable approach.
Fourier Series And Fourier Transform Representsation
Introduction, Trigonometric form of Fourier series, Exponential form of Fourier series, Wave symmetry, Fourier integrals and transforms, Fourier transform of a periodic function , Properties of Fourier Transform , Parseval's theorem , Fourier transform of some common signals, Fourier transform relationship with Laplace Transform
.
UNIT-II Applications of Fourier series and Fourier Transform Representation
Introduction, Effective value and average values of non sinusoidal periodic waves, currents, Power Factor, Effect s of harmonics, Application in Circuit Analysis, Circuit Analysis using Fourier series.
Laplace Transform Applications
Application of Laplace transform Methods of Ananlysis – Response of RL, RC, RLC

Networks to Step, Ramp, and impulse functions, Shifting Theorem – Convolution Integral – Applications

UNIT-III Testing of Polynomials
Elements of realisability-Hurwitz polynomials-positive real functions-Properties-Testing-Sturm's Test, examples.
Network synthesis: Synthesis of one port LC networks-Foster and Cauer methods-Synthesis of RL and RC one port networks-Foster and Cauer methods

UNIT-IV Sampling
Sampling theorm – Graphical and Analytical proof for Band Limited Signal impulse sampling, natural and Flat top Sampling, Reconstruction of signal from its samples, effect of under sampling – Aliasing, introduction to Band Pass sampling, Cross correlation and auto correlation of functions, properties of correlation function, Energy density spectrum, Power density spectrum, Relation between auto correlation function and Energy / Power spectral density function.

UNIT-V Z-Transforms
Fundamental difference between continuous and discrete time signals, discrete time complex, exponential and sinusoidal signals, periodicity of discrete time complex exponential, concept of Z-Transform of a discrete sequence. Distinction between Laplace, Fourier and Z-Transforms. Region of convergence in Z-Transforms, constraints on ROC for various classes of signals, Inverse Z-Transform properties of Z-Transforms.

Text Books:
1. Signals, Systems and Communications by B.P. Lathi, BS Publications 2003.
2. Network Analysis and Synthesis – Umesh Sinha- Satya Prakashan Publications

Reference Books:
1. Linear System Analysis – A N Tripathi, New Age International
2. Network and Systems – D Roy Chowdhary, New Age International
3 Engineering Network Analysis and Filter Desgin- Gopal G Bhisk & Umesh
4. Linear system anlysis by A.Cheng, Oxford publishers.

Course Outcomes:
Knowledge to understanding of:

- Designing techniques of various Circuits with respect to Transfer Function.
- The way of thinking and implementing the hardware circuits.
- The methods to improve the efficiency and bandwidth.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(A9423) DIGITAL SIGNAL PROCESSING
(PROFESSIONAL ELECTIVE –IV)

IV Year B.Tech. EEE I-Sem

L	T	P	C
3	0	0	3

Pre- Requisites:
Mathematics- I
Mathematics- II

Course Objectives:

- To provide background and fundamental material for the analysis and processing of digital signals.
- To familiarize the relationships between continuous time and discrete time signals and systems.
- To study fundamentals of time, frequency and Z-plane analysis and to discuss the inter-relationships of these analytic method.
- To study the designs and structures of digital (IIR & FIR) filters from analysis to synthesis for a given specifications.
- The impetus is to introduce a few real-world signal processing applications.
- To acquaint in FFT algorithms, multi-rate signal processing techniques and finite word length effects.

Unit I Theory of Discrete Time Linear Systems
Introduction, Classification of Signals and Systems, Discrete Time systems, Linearity, Time Invariance, Causality, Stability, Difference equations, Z-transform, Inverse Z transforms. Transfer function of linear discrete systems, Impulse response, Recursive, Non-recursive filters, Digital filter realization – Direct, canonic, cascade, parallel and ladder realizations

Unit II Discrete Fourier Transforms
Discrete Fourier Transform (DFT) definition, Properties of discrete Fourier transform, Convolution of sequences - linear convolution. **FFT algorithms:** Introduction to Radix 2

Fast Fourier transform (FFT), Properties of Radix 2 FFT, Decimation in time FFT, Data shuffling and Bit reversal, Decimation in frequency FFT Algorithms, Computing Inverse DFT by doing a direct DFT.

Unit III Theory and Design of Digital Non Recursive Filters
Design characteristics of FIR filters with linear phase, Frequency response of linear phase FIR filters, Design of FIR filters using window functions.

Unit IV Theory and Design Of Digital Recursive Filters
Review of design techniques for analog low pass filter, frequency transformation, Properties of IIR filter, IIR filter design, Different methods of IIR filter design.

Unit V General Purpose Digital Signal Processors
Introduction, Computer architectures for signal processing- Harvard architecture, Pipelining, Hardware multiplier, accumulator, replication, On chip memory/cache and Extended parallelism. General-purpose
Digital signal processors-Fixed point and floating point DSP. Selecting digital signal processors, .Implementation of DSP algorithms on general purpose DSP, FIR digital filtering.

Text Books
1. J.G.Proakis , D.G. Manolakis and D. Sharma, Digital Signal Processing - Principles, Algorithms and Applications, Pearson Education, 2006
2. Simon Haykin & Barry van veen, Signals and Systems, 2nd edition, John Wiley publication, 2004/2005

References
1. Oppenhiem V.A. and Schaffer, Discrete - time Signal Processing, Prentice Hall of India,2005
2. Leudeman L.C, Fundamentals of Digital Signal Processing, Harper & Row Publication,2006
3. Emmanuel C.Ifeachor, Digital Signal Processing -A Practical Approach , Pearson Education, 2006
4. Andreas Antoniou, Digital Signal Processing, Tata McGraw-Hill,-2006

Course Outcomes:
On completion of this subject, the student should be able to:
- Perform the frequency and Z-transform analysis on signals and systems.
- Understand the inter relationship between DFT and various transforms.
- Design a digital filter for a given specification.
- Understand the fast computation of DFT and appreciate the FFT processing.
- Understand the tradeoffs between normal and multi rate DSP techniques and finite length word effects.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(A9237) ELECTRICAL DISTRIBUTION SYSTEMS
(PROFESSIONAL ELECTIVE –V)

IV Year B.Tech. EEE I-Sem

L	T	P	C
3	1	0	3

Pre-Requisites:
Power Systems- I
Power Systems-II

Course Objectives:

- To study the fundamental principles and various parts/components of power distribution systems.
- To identify the various Electric loads & their characteristics
- Impart knowledge of Distribution system protection.
- Understanding protective devices coordination.
- Power factor improvement & Voltage control.

UNIT – I General Concepts
Introduction to distribution systems, Load modelling and characteristics. Coincidence factor, contribution factor loss factor - Relationship between the load factor and loss factor. Classification of loads (Residential, commercial, Agricultural and Industrial) and their characteristics.

Distribution Feeders
Design Considerations of Distribution Feeders: Radial and loop types of primary feeders, voltage levels, feeder loading; basic design practice of the secondary distribution system.

UNIT – II Substations
Location of Substations: Rating of distribution substation, service area within primary feeders. Benefits derived through optimal location of substations.

System Analysis
Voltage drop and power-loss calculations: Derivation for voltage drop and power loss in lines, manual methods of solution for radial networks, three phase balanced primary lines.

UNIT – III Protection

Objectives of distribution system protection, types of common faults and procedure for fault calculations. Protective Devices: Principle of operation of Fuses, Circuit Reclosures, line sectionalizes, and circuit breakers

Coordination

Coordination of Protective Devices: General coordination procedure.

UNIT – IV Compensation for Power Factor Improvement

Capacitive compensation for power-factor control. Different types of power capacitors, shunt and series Capacitors, effect of shunt capacitors (Fixed and switched), Power factor correction, capacitor allocation Economic justification - Procedure to determine the best capacitor location.

UNIT – V Voltage Control

Voltage Control: Equipment for voltage control, effect of series capacitors, effect of AVB/AVR, line drop Compensation.

Text book:

1."Electric Power Distribution system, Engineering" – by Turan Gonen, Mc Graw-hill Book Company.
2. Electric Power Distribution – by A.S. Pabla, Tata Mc Graw-hill Publishing Company, 4th edition, 2008.

Reference book:

1. Electrical Power Distribution and Automation by S.Sivanagaraju, V.Sankar, Dhanpat Rai & Co, 2006
2. Electrical Power Distribution Systems by V.Kamaraju, Right Publishers.

Course Outcomes:

- The student will be able to calculate the distribution voltage drop calculations
- The student can design the required capacitor to compensate the losses in distribution system
- Able to design required capacitor for power factor correction and improvement
- Study the equipment required for voltage control and line drop compensation

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(A9238) NEURAL NETWORKS AND FUZZY SYSTEMS
(PROFESSIONAL ELECTIVE –V)

IV Year B.Tech. EEE I-Sem

L	T	P	C
3	1	0	3

Pre-Requisites: Mathematics-I

Course Objective:

- The aim of this course is to provide students with an understanding of the fundamental theory of neural networks and fuzzy systems.
- The objective is intended for students to apply neural networks and fuzzy systems to model and solve complicated practical problems such as recognition.
- To cater the knowledge of Neural Networks and Fuzzy Logic Control and use these in developing Artificial intelligence based control of real time systems

UNIT – I: Introduction to Neural Networks

Introduction, Humans and Computers, Organization of the Brain, Biological Neuron, Biological and Artificial Neuron Models, Hodgkin-Huxley Neuron Model, Integrate-and-Fire Neuron Model, Spiking Neuron Model, Characteristics of ANN, McCulloch-Pitts Model, Historical Developments, Potential Applications of ANN.

Essentials of Artificial Neural Networks: Artificial Neuron Model, Operations of Artificial Neuron, Types of Neuron Activation Function, ANN Architectures, Classification Taxonomy of ANN – Connectivity, Neural Dynamics (Activation and Synaptic), Learning Strategy (Supervised, Unsupervised, Reinforcement), Learning Rules, Types of Application.

UNIT–II: Feed Forward Neural Networks

Single Layer Feed Forward Neural Networks: Introduction, Perceptron Models: Discrete, Continuous and Multi-Category, Training Algorithms: Discrete and Continuous Perceptron Networks, Perceptron Convergence theorem, Limitations of the Perceptron Model, Applications.

Multilayer Feed Forward Neural Networks

Credit Assignment Problem, Generalized Delta Rule, Derivation of Backpropagation (BP) Training, Summary of Backpropagation Algorithm, Kolmogorov Theorem, Learning Difficulties and Improvements.

UNIT III: Associative Memories

Paradigms of Associative Memory, Pattern Mathematics, Hebbian Learning, General Concepts of Associative Memory (Associative Matrix, Association Rules, Hamming Distance, The Linear Associator, Matrix Memories, Content Addressable Memory).Bidirectional Associative Memory (BAM) Architecture, BAM Training Algorithms: Storage and Recall Algorithm, BAM Energy Function, Proof of BAM Stability Theorem .Architecture of Hopfield Network: Discrete and Continuous versions, Storage and Recall Algorithm, Stability Analysis, Capacity of the Hopfield Network.

UNIT – IV: Classical and Fuzzy Sets
Introduction to classical sets - properties, Operations and relations; Fuzzy sets, Membership, Uncertainty, Operations, properties, fuzzy relations, cardinalities, membership functions.

UNIT V: Fuzzy Logic System
Fuzzification, Membership value assignment, development of rule base and decision making system, Defuzzification to crisp sets, Defuzzification methods.

Text books:

1. Kosko, B, "Neural Networks and Fuzzy Systems: A Dynamical Approach to Machine Intelligence", PrenticeHall, NewDelhi, 2004.
2. Timothy J Ross, "Fuzzy Logic with Engineering Applications", John Willey and Sons, West Sussex, England, 2005.
3. Rajasekharan and Pai, Neural Networks, Fuzzy logic, Genetic algorithms: synthesis andapplications– PHI Publication.
4. Satish Kumar, Neural Networks, TMH, 2004.

Reference books:

1. Jack M. Zurada, "*Introduction to Artificial Neural Systems*", PWS Publishing Co., Boston, 2002.
2. S. Kumar, "Neural Networks: A Classroom Approach," McGraw Hill, 2005.

Course Outcomes:

- To expose the students to the concepts of feed forward neural Networks
- To provide adequate knowledge about feedback networks.
- To teach about the concept of fuzziness involved in various systems. To provide adequate knowledge about fuzzy set theory.
- To provide comprehensive knowledge of fuzzy logic control and adaptive fuzzy logic and to design the fuzzy control using genetic algorithm.
- To provide adequate knowledge of application of fuzzy logic control to real time systems in engineering.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(A9239) DIGITAL CONTROL SYSTEMS
(PROFESSIONAL ELECTIVE –V)

IV Year B.Tech. EEE I-Sem

L	T	P	C
3	1	0	3

Pre-Requisites: Control Systems

Course Objectives:

- To equip the students with the basic knowledge of A/D and D/A conversion
- To understand the basics of Z- Transform
- To study the stability analysis of digital control system
- Analyze digital control systems using state-space methods.
- Analyze digital control systems using transform techniques (frequency response) and state-space methods (pole-assignment).

UNIT I: Introduction to Digital Control Systems And Z-Transforms

Introduction - Merits and Demerits of Digital Control Systems - Practical aspects of the choice of sampling rate and Multirate sampling - Basic discrete time signals - Quantization – Sampling Theorem - Data Conversions and Quantization - Sampling process - Mathematical Modeling - Data Reconstruction and Filtering of sampled signals – Zero - Order Hold (ZOH).

z- Transform and Inverse z-Transform, Relationship between s - plane and z - plane - Difference equation - Solution by recursion and z-Transform - Pulse Transfer Functions of the ZOH and relationship between G(s) and G(z)– Bilinear Transformation .

UNIT II: Input/output Analysis Of Digital Control Systems

Pulse transfer function - z transform analysis of open loop, closed loop systems - Modified z Transform - transfer function - Stability of linear digital control systems - Stability tests – Jury Stability test.

Root loci - Frequency domain analysis - Bode plots - Gain margin and phase margin.

UNIT III: Design of Controllers For I/O Model Digital Control Systems

Cascade and Feedback Compensation by continuous data controllers - Digital controllers - Design using Bilinear Transformation - Realization of Digital PID controllers, Design of Digital Control Systems based on Root Locus Technique.

UNIT IV: State Space Analysis and State Feedback Control Design of Digital Control Systems
State Equations of discrete data systems, solution of discrete state equations, State Transition Matrix: Computation methods for State Transition Matrix: z - transform method. Relation between State Equations and Pulse Transfer Functions. Concepts on Controllability and Observability - Pole placement design by state feedback.

UNIT V: Digital State Observer and Stability Analysis
Design of the full order and reduced order state observer, Design of Dead beat Controller - some case studies - Stability analysis of discrete time systems based on Lyapunov approach.

Text books:
1. K. Ogata, Discrete Time Control Systems, PHI/Addison - Wesley Longman Pte. Ltd., India, Delhi, 1995.
2. B.C Kuo, Digital Control Systems, 2nd Edition, Oxford Univ Press, Inc., 1992.

Reference books:
1. F. Franklin, J.D. Powell, and M.L. Workman, Digital control of Dynamic Systems, Addison - Wesley Longman, Inc., Menlo Park, CA , 1998.
2. M. Gopal, Digital Control and State Variable Methods, Tata McGraw Hill, India, 1997.
3. C. H. Houpis and G.B. Lamont, Digital Control Systems, McGraw Hill, 1985.
4. John S. Baey, Fundamentals of Linear State Space Systems, Mc. Graw – Hill, 1st edition.
5. Bernard Fried Land, Control System Design, Mc. Graw – Hill, 1st edition.
6. Dorsay, Continuous and Discrete Control Systems, McGraw - Hill.

Course Outcomes:

- This course provides a foundation in discrete-time linear control system theory.
- Analyze digital control systems using transform techniques (frequency response) and state-space methods (pole-placement).
- Analyzing and understanding the challenges to interface digital computing devices with the Analog dynamics of most real-world systems.

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VAAGDEVI COLLEGE OF ENGINEERING

(AUTONOMOUS)

(A9430) EMBEDDED SYSTEMS

(PROFESSIONAL ELECTIVE –V)

IV Year B.Tech. EEE I-Sem

L	T	P	C
3	1	0	3

Pre- Requisites: None

Course Objectives

For embedded systems, the course will enable the students to:

- Understand the basics of an embedded system
- Program an embedded system
- To learn the method of designing an Embedded System for any type of applications.
- To understand operating systems concepts, types and choosing RTOS.
- Design, implement and test an embedded system.

UNIT -I

Introduction to Embedded Systems: Definition of Embedded System, Embedded Systems Vs General Computing Systems, History of Embedded Systems, Classification, Major Application Areas, Purpose of Embedded Systems, Characteristics and Quality Attributes of Embedded Systems.

UNIT-II

Typical Embedded System: Core of the Embedded System: General Purpose and Domain Specific Processors, ASICs, PLDs, Commercial Off- The-Shelf Components (COTS), Memory: ROM, RAM, Memory according to the type of Interface, Memory Shadowing, Memory selection for Embedded Systems, Sensors and Actuators, Communication Interface: Onboard and External Communication Interfaces.

UNIT -III

Embedded Firmware: Reset Circuit, Brown-out Protection Circuit, Oscillator Unit, Real Time Clock, Watchdog Timer, Embedded Firmware Design Approaches and Development Languages.

UNIT -IV

RTOS Based Embedded System Design: Operating System Basics, Types of Operating Systems, Tasks, Process and Threads, Multiprocessing and Multitasking, Task Scheduling.

UNIT -V

Task Communication: Shared Memory, Message Passing, Remote Procedure Call and Sockets, Task Synchronization: Task Communication/ Synchronization Issues, Task Synchronization Techniques, Device Drivers, How to Choose an RTOS.

Text Book

- Introduction to Embedded Systems – Shibu K.V, Mc Graw Hill.

Reference Books

1. Embedded Systems Raj Kamal, TMH.
2. Embedded System Design – Frank Vahid, Tony Givargis, John Wiley.
3. Embedded Systems — Lyla, Pearson, 2013
4. An Embedded Software Primer – David E. Simon, Pearson Education.

Course Outcomes

Upon completion of this course, the student will be able to:

- Understand and design embedded systems.
- Learn basic of OS and RTOS
- Understand types of memory and interacting to external world.
- Understand embedded firmware design approache.

VAAGDEVI COLLEGE OF ENGINEERING

(AUTONOMOUS)

(A9240) POWER SYSTEMS LAB

IV Year B.Tech. EEE I-Sem

L	T	P	C
0	0	3	2

Pre-Requisites:

Electrical Circuits-II
Power System-I
Power System-II

Course Objectives:

This course is aimed to gain knowledge on

- Performance of Transmission Line.
- Operation and Performance of Over/Under Voltage and Over Current relays.
- Calculation of Sequence Impedances of 3-Φ Transformer.
- Operation of Electromagnetic type IDMT Over Current Relay.
- Fault analysis of Feeder and Alternator.

List of Experiments:

1. Performance and testing of Transmission Line Model.
2. Characteristics of Under Voltage Relay.
3. Characteristics of Over Voltage Relay.
4. Characteristics of IDMT Over Current Relay.
5. Performance and testing of Feeder protection system
6. Characteristics of Static Negative Sequence Relay.
7. Fault analysis of an Alternator- Line to Ground Fault.

8. Fault analysis of an Alternator- Line to Line Fault.
9. Determination of Sequence Impedances of 3-Φ Transformer.
10. Differential Protection of 1-Φ Transformer.

Course Outcomes:
After completion of this course students gain knowledge on
- Calculation of Transmission line parameters, efficiency and regulation.
- Performance analysis of Over/Under Voltage Relay.
- Analysis and performance testing of Feeder Protection System
- Calculation of Sequence Reactances of 3-Φ Transformer.
- Application and usage of IDMT Over Current Relay.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(A9428) MICROPROCESSORS AND MICROCONTROLLERS LAB

IV Year B.Tech. EEE I-Sem

L	T	P	C
0	0	3	2

Pre- Requisites: Switching Theory and Logic Design

Course Objectives:
- To develop an in-depth understanding of the operation of microprocessors and microcontrollers, machine language programming & interfacing techniques.

List of Experiments:
1. Programs for 16 bit arithmetic operations for 8086 (using Various Addressing Modes).
2. Program for sorting an array for 8086.
3. Program for searching for a number or character in a string for 8086.
4. Program for string manipulations for 8086.
5. Program for digital clock design using 8086.
6. Interfacing ADC and DAC to 8086.
7. Parallel communication between two microprocessors using 8255.
8. Serial communication between two microprocessor kits using 8251.
9. Interfacing to 8086 and programming to control stepper motor.
10. Programming using arithmetic, logical and bit manipulation instructions of 8051.
11. Program and verify Timer/ Counter in 8051.
12. Program and verify Interrupt handling in 8051
13. UART Operation in 8051.
14. Communication between 8051 kit and PC.
15. Interfacing LCD to 8051.
16. Interfacing Matrix/ Keyboard to 8051.
17. Data Transfer from Peripheral to Memory through DMA controller 8237 / 8257.

Note: Minimum of 12 experiments are to be conducted.

The above programs/experiments are to be written for assembler and to be executed the same with 8086 and 8051 kits.

Course Outcomes

- Demonstrate experimentally basic programming of Microprocessor.
- Exhibit microprocessor interfacing with various peripherals for various applications.
- Demonstrate experimentally basic programming of microcontroller.
- Exhibit microprocessor interfacing with various peripherals for various applications.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(A9241) SIMULATION OF ELECTRICAL SYSTEMS LAB

IV Year B.Tech. EEE I-Sem

L	T	P	C
0	0	3	2

Prerequisites:
Control Systems
Power Electronics
Power Systems-I
Power Systems-II

Course Outcomes:
To get the Simulation Knowledge about

- Concepts on Time Response & frequency response Analysis
- Concepts on Load Flow analysis

List of Experiments:

1. Write Program and simulate dynamical system of following models:
   i) I/O Model
   ii) State Variable Model
   Also Identify time domain specifications of each.
2. Determine stability of a given dynamical system using following methods:
   i) Root Locus
   ii) Bode plot
   iii) Nyquist Plot
   iv) Liapunous stability criteria
3. Obtain model matrix of a given system. obtain it's diagonalize form if exists
   Or obtain Jordan canonical form of system.
4. Design a compensator for a given systems for required specifications
5. Develop a program to solve Swing Equation
6. Develop a simulink model for a single area load frequency problem and simulate the same

7. Develop a simulink model for a two area load frequency problem and simulate the same
8. PSPICE Simulation of Single phase full converter using RL and E Loads
9. PSPICE Simulation of Three phase full converter using RL and E Loads
10. PSPICE Simulation of Single phase AC Voltage controller using RL Load
11. PSPICE Simulation of Three Phase Inverter with PWM controller
12. Develop a program for Ybus formation
13. Develop a program for Load flow solution of Electrical System.

Note: From the above list conduct any ten experiments using MATLAB or equivalent Open Source Software.

Course Outcomes:
After learning this course the student can able to

- Get the simulation knowledge
- Analyze the concepts based on simulated results in the domain of Electrical Engineering

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(A9243) ADVANCED POWER ELECTRONICS
(PROFESSIONAL ELECTIVE-VI)

IV Year B.Tech. EEE II-Sem | **L T P C** | **3 0 0 3**

Pre-Requisites:
Power Electronics

Course Objectives: With the advent of semiconductor devices, revolution is taking place in the power transmission distribution and utilization. This course

- Introduces the Modern power semiconductor devices,
- To get the knowledge of Resonant pulse inverters
- To get the Knowledge of Resonant converters, Multilevel Inverters.

UNIT-I: Modern Power Semiconductor Devices
Modern Power semiconductor devices – MOS Turn Off Thyristor (MTO) – Emitter Turn off Thyristor (ETO) – Intergrated Gate-Commutated thyristor (IGCTs) – MOS-controlled thyristors (MCTs) – Static Induction Thyristors (SITHs) –Power Integrated circuits (PICs) Symobol.Structure and equivalent circuit- comparison of their features.

UNIT – II : Resonant Pulse Inverters
Resonant pulse inverters- series resonant inverters-series resonant inverters with Unidirectional Switches-series resonant inverters with bidirectional switches- Analysis of half bridge resonant inverter – Evaluation of currents and voltages of a simple resonant inverter – Analysis of half bridge and full bridge resonant inverter with bidirectional switches

UNIT-III: Resonant Converters
Resonant converter – zero current switching resonant converters – L type ZCS resonant converter – M type ZCS resonant converter – Zero voltage switching resonant converters – comparison between ZCS and ZVS resonant converters – Two quadrant ZVS resonant converters – resonant dc link inverters – evaluation of L and C for a zero current switching inverter-Numerical problems

UNIT-IV: Multilevel Inverters -I

Multilevel concept – Classification of multilevel inverters – Diode clamped Multilevel inverter – principle of operation – main features – improved diode Clamped inverters – principle of operation – Flying capacitors multilevel inverter – principle of operation – main features

UNIT-V: Multilevel Inverters -II

Cascaded multilevel inverter – principle of operation – main features – Multilevel inverter applications – reactive power compensation – back to back intertie system – adjustable drives- switching device currents – dc link capacitor voltage balancing – features of Multilevel inverters – comparisons of multi level converters

Text books:

1. Power Electronics – Mohammed H. Rashid – Pearson Education Third Edition – First Indian reprint 2004.
2. Power Electronics – Ned Mohan, Tore M. Undeland and William P. Robbins – John Wiley and Sons – Second Edition.
3. Power Electronics Devices, Circuits and Industrial applications, V. R. Moorthi, Oxford University Press

Reference books:

1. Power Electronics, Dr. P. S. Bimbhra, Khanna Pubishers.
2. Elements of Power Electronics, Philip T. Krein, Oxford University Press.

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

- Distinguish between different types of Modern power semiconductor devices and their characteristics.
- Analyze of Resonant Conveters
- Analyze ZVs and ZCS techniques

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(A9244) ELECTRICAL MACHINE DESIGN
(PROFESSIONAL ELECTIVE-VI)

IV Year B.Tech. EEE II-Sem

L	T	P	C
3	0	0	3

Pre-Requisites:
Electrical Machines-I
Electrical Machines-II
Electrical Machines-III

Course Objectives:
This Course will develop student's knowledge in/on

- Design fundamental concepts of electrical machine.
- Knowing the main dimensions of d.c. machines.
- Understand the design main dimensions & cooling systems of transformers.
- Acquiring the design main dimensions & cooling systems of induction & synchronous machines.

UNIT-I Basic Considerations: Basic concept of design, Limitation in design, Standardization, modern trends in design and Manufacturing techniques, Classification of insulating materials. Modes of heat dissipation & temperature rise time curves. Methods of cooling ventilation (induced & forced, Radial & axial), Direct cooling & quantity of cooling medium. Calculation of total mmf and magnetizing current. Specific permeance and leakage reactance.

UNIT-II Design of DC Machines:
Output equation, choice of specific loading and choice of number of poles, Design of Main dimensions of DC machines, Design of armature slot dimensions, Commutator and brushes,

Magnetic circuit – estimation of ampere turns, Design of yoke and poles- main and inter poles, Field windings- shunt, Series and inter poles.

UNIT-III Design of Transformers (Single Phase):
Output equation for single phase, Choice of specific loadings, Expression for volts/turn, determination of main dimensions of the core, types of windings and estimation of number of number of turns and conductor cross sectional area of primary and secondary windings, estimation of no load current, Expression for leakage reactance and voltage regulation.
Design of Transformers (Three Phase): Output equation for three phase transformers, Choice of specific loadings, expression for volts/turn, Determination of main dimensions of the core, Types of windings and estimation of number turns and conductor cross sectional area of primary and secondary windings, Estimation of no load current, expression for leakage reactance and voltage regulation. Design of tank and cooling tubes (round and rectangular).

UNIT-IV Design of Induction Motors:
Output equation, choice of specific loadings, Main dimensions of three phase induction motor, Stator winding design, Choice of length of the air gap, estimation of number of slots for the squirrel cage rotor, Design of Rotor bars and end ring, Design of Slip ring induction motor, Estimation of No load current and leakage reactance, and Circle diagram.

UNIT-V Design of Synchronous Machines:
Output equation, Choice of specific loadings, Short circuit ratio, Design of main dimensions, Armature slots and windings, Slot details for the stator of salient and non- salient pole synchronous machines. Design of rotor of salient pole synchronous Magnetic circuits, Dimensions of the pole body, Design of the field winding, and Design of rotor of non- salient pole machine, Introduction to computer aided design.

Text Books:
1. Sawhney A.K., Chakrabarti A., ―A Course in Electrical Machine Design‖, Dhanpat Rai & Sons Company Limited, New Delhi, 6/e, 2006.
2. Mittle V.N., Mittle A., ―Design of Electrical Machines‖, Standard Publications and Distributors, New Delhi, 2002.

Reference Books:
1. Sen, S.K, ―Principles of Electric Machine Design with Computer Programmes‖, Oxford & IBH Publishing Company Private Limited, 2001, Reprint 2004.
2. Agarwal R.K, S.K.Kataria and Sons ―Principles of Electrical Machine Design, NewDelhi, 2002.
3. Shanmugasundaram,A., Gangadharan G. and Palani R., ―Electrical Machine Design DataBook‖, New Age International Publishers Private Limited., 1/e, 1979, Reprint 2005.

Course Outcomes:
After completion of this course, students will be able to

- Design of various parts of dc machines and solve the problems.
- Design concepts of transformers and know about how to design the parts.

- Design concepts of induction machines and solve the problems
- Design concepts of synchronous machines and solve the problems

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
(A9545) SOFT COMPUTING
(PROFESSIONAL ELECTIVE-VI)

IV Year B.Tech. EEE II-Sem **L T P C**
3 0 0 3

Pre-Requisites: None

Objectives:

- To introduce with soft computing concepts like neural networks, supervised learning and unsupervised learning techniques, concepts of neural network basics and its types and understand the features of fuzzy sets and its relations.
- To familiarize the applications of neural networks and fuzzy logic member function features and to know the real time applications of internet search techniques and fuzzy

UNIT-I

Introduction: Neural Networks, Fuzzy Logic, Genetic Algorithms, Hybrid Systems, Soft Computing, Soft Computing Constituents, Soft Computing Characteristics. Artificial Neural Networks: Introduction, Fundamental Concept, Evolution of Neural Networks, Basic models of ANN, Important Terminologies.(page.no 1-27)

UNIT-II

Supervised Learning Networks: Introduction, Perceptron Networks, Adaptive Linear Neuron, Back propagation Network. Associative Memory Networks: Introduction, Training Algorithms for pattern association and Hopfield Networks.(page.no 49-116)

UNIT-III

Unsupervised Learning Networks: Introduction, Fixed Weight Competitive Nets, Kohonen Self-Organizing Feature Maps, Counter Propagation Networks. Fuzzy Sets: Introduction, Classical Sets, Fuzzy Sets, Classical Relations, Fuzzy Relations (page. no 147-286)

UNIT-IV

Membership functions- Features, Fuzzification, Membership value assignments, Defuzzification Methods, Fuzzy Arithmetic, Fuzzy Measures, Fuzzy Inference Systems, and Fuzzy Logic Control Systems(page no.295-377)

UNIT-V

Genetic Algorithms- Introduction, Basic operators and terminology, Traditional, Algorithm vs Genetic Algorithm, Simple GA, General GA, Classification of GA, Genetic Programming, Applications of GA (page no.385-462) ,Applications of Soft Computing : (page no. 511-681)

Text books:

1. Principles of Soft Computing- S N Sivanandam, S N Deepa, Wiley India, 2007

Reference books:

1. Artificial Intelligence and Soft Computing- Behavioral and Cognitive Modeling of the Human Brain- Amit Konar, CRC press, Taylor and Francis Group.
2. Soft Computing and Intelligent System Design -Fakhreddine O Karray, Clarence D Silva,. Pearson Edition, 2004.
3. Artificial Intelligence – Patric Henry Winston – Third Edition, Pearson Education.
4. Fuzzy Sets and Fuzzy Logic Theory and Applications – George J.Klir, Bo Yuan
5. Genetic Algorithms in Search, Optimization and Machine Learning – David E.Goldberg Addison-Wesley
6. An Introduction to Genetic Algorithms – Melanie Mitchell, MIT Press
7. Neuro-Fuzzy and Soft Computing A Computational Approach to Learning and Machine Intelligence – J.S.R.Jang, C.T.Sun, E.Mizutani, PHI

Course outcomes:

Upon completion of this course, students should be able to:

- A strong foundation in core computer science and engineering, both theoretical and applied concepts.
- An ability to apply knowledge of mathematics, science, and engineering to real-world problems.
- Ability to model, understands, and develop complex software for system software as well as application software.
- The broad education necessary to understand the impact of computer science and engineering solutions in the scientific, societal and human contexts

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(A9245) POWER QUALITY
(PROFESSIONAL ELECTIVE-VI)

IV Year B.Tech. EEE II-Sem

L	T	P	C
3	0	0	3

Pre-Requisites:
Power Systems-I
Power Systems- II
Power Electronics

Course Objectives:

- To study and understand the definitions and various power quality issues
- To know the mitigation and measuring techniques related to power quality.

UNIT-I: Introduction
Introduction of the Power Quality (PQ) problem, Terms used in PQ: Voltage, Sag, Swell, Surges, Harmonics, over voltages, spikes, Voltage fluctuations, Transients, Interruption, overview of power quality phenomenon, Remedies to improve power quality, power quality monitoring.

UNIT-II: Long & Short Interruptions
Interruptions – Definition – Difference between failures, outage, Interruptions – causes of Long Interruptions – Origin of Interruptions – Limits for the Interruption frequency – Limits for the interruption duration – costs of Interruption – Overview of Reliability evaluation to power quality, comparison of observations and reliability evaluation.

Short Interruptions: definition, origin of short interruptions, basic principle, fuse saving, voltage magnitude events due to re-closing, voltage during the interruption, monitoring of short interruptions, difference between medium and low voltage systems. Multiple events, single phase tripping – voltage

and current during fault period, voltage and current at post fault period, stochastic prediction of short interruptions.

UNIT III: 1 & 3-Phase Voltage Sag Characterization
Voltage sag – definition, causes of voltage sag, voltage sag magnitude, and monitoring, theoretical calculation of voltage sag magnitude, voltage sag calculation in non-radial systems, meshed systems, and voltage sag duration.
Three phase faults, phase angle jumps, magnitude and phase angle jumps for three phase unbalanced sags, load influence on voltage sags.

UNIT-IV: Power Quality Considerations in Industrial Power Systems
Voltage sag – equipment behavior of Power electronic loads, induction motors, synchronous motors, computers, consumer electronics, adjustable speed AC drives and its operation. Mitigation of AC Drives, adjustable speed DC drives and its operation, mitigation methods of DC drives.

UNIT-V: Mitigation Of Interruptions & Voltage Sags
Overview of mitigation methods – from fault to trip, reducing the number of faults, reducing the fault clearing time changing the power system, installing mitigation equipment, improving equipment immunity, different events and mitigation methods. System equipment interface –voltage source converter, series voltage controller, shunt controller, combined shunt and series controller.

Power quality and EMC standards:
Introduction to standardization, IEC Electromagnetic compatibility standards, European voltage characteristics standards, PQ surveys.

Text Books:
1) Understanding Power Quality Problems" by Math H J Bollen. IEEE Press.
2) Power Quality, C. Sankaran, CRC Presss

Reference book:
1. Power Quality VAR Compensation in Power Systems, R. SastryVedam Mulukutla S. Sarma, CRC Press..
3. Electrical Power Systems Quality, Roger C. Dugan , Mark F. Mc Granaghan, Surya Santoso, H. Wayne Beaty, Tata McGraw Hill Education Private Ltd.

Course Outcomes:

After completion of the course, the student should be able to know

- Basic concepts of power quality issues.
- Voltage and current during the fault period of a given power system.
- Sags and phase angle jumps in different types of faults.
- Various equipment behavior with voltage sags.
- Various interfacing devices between system and equipment to mitigate the sags and interruptions

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VAAGDEVI COLLEGE OF ENGINEERING
AUTONOMOUS

(A9624) ENTREPRENEURSHIP DEVELOPMENT
(PROFESSIONAL ELECTIVE-VI)

IV Year B.Tech. EEE II-Sem

L	T	P	C
3	0	0	3

Pre requisites: None

Course Objective: The objective of the course is to make students understand the nature of entrepreneurship, and to motivate the student to start his/her own enterprise. The objective of the course is to enlighten with the fragrance of Corporate Good Governance and Business Ethics, so that they would become the best entrepreneurs / managers of the corporate world.

Unit – I

Nature of Entrepreneurship; Characteristics – Qualities and skills of an Entrepreneur – Functions of entrepreneur – Entrepreneur scenario in India and Abroad. Forms of Entrepreneurship: Small Business – Importance in Indian Economy – Types of ownership – Sole trading – Partnership – Joint stock company and other forms. First – Mover disadvantages, Risk Reduction strategies, Market scope strategy, Imitation strategies and Managing Newness

Unit – II

Aspects of Promotion: Generation of new entry opportunity, SWOT Analysis, Technological Competitiveness, legal regulatory systems, patents and trademarks, Intellectual Property Rights- Project Planning and Feasibility Studies- Major steps in product development. Financial Aspects: Sources of raising Capital, Debt-Equity, Financing by Commercial Banks, Government Grants and Subsidies, Entrepreneurship Promotion Schemes

of Department of Industries (DIC), KVIC, SIDBI,NABARD, NSIC, APSFC, IFCI and IDBI. New Financial Instruments.

Unit - III

Introduction to Business Ethics: Necessity for Business Ethics-Need for Ethical guideline – Salient Issues in Ethics and Commerce- Ethics as a Luxury – Earlier attempts at Ethics in Industry – Justification for Ethics – Effect of Migration of National Character – Shadow Economy – Basic Principles in Ethics – Corporate Climate and corporate climate audits – Political Issues – Nature and theory of Ethics – The Naturalistic fallacy - G.E.Moore's Philosophy.

Unit – IV

Understanding Corporate Governance: Corporate Governance- Capitalism at crossroads – Historical perspective of Corporate Governance – Issues of Corporate Governance – Theoretical basis of Corporate Governance – Corporate Governance mechanisms – Indian Model of Governance – Good Corporate Governance – Corporate Governance committees – OECD Principles – Indian Committee and guidelines – The confederation of Indian Industry's initiative. Corporate Governance Models, Corporate Social Responsibility.

Unit – V

Corporate Social Responsibility: System Concept of Business Society – Social Responsibility – Social Responsibility tools – approaches to Ethics – Corporate Social Accountability - Business in a Social World – Ethics and Social Responsibility – professional ethics – Ethics of practicing company secretaries- Ethical investing.

Text Books:

1. Robert D Hisrich, Michael P Peters, Dean A Shepherd: Entrepreneurship, TMH, 2009
2. Vasanth Desai: Entrepreneurship, HPH, 2009
3. C.S.V.Murthy: Business Ethics & Corporate Governance, Himalaya, 2009.

References:

1. Bholanath Dutta: Entrepreneurship Text and Cases, Excel, 2009
2. David Martin: Corporate Governance, Viva, 2009
3. H. Nandan: Fundamentals of Entrepreneurship, PHI, 2009.
4. Barringer: Entrepreneurship, Pearson,2009.
5. Ronald D Francis & Mukti Mishra: Business Ethics, TMH, 2009
6. RK Mishra,Gitarani: Corporate Governance, Excel,2009
7. A.C.Frenando: Corporate Governance, Pearson, 2006
8. V.Balachandran & V.Chandrasekaran: Corporate Governance & Social Responsibility, PHI, 2009
9. A.C.Fernando: Business Ethics, Pearson, 2009
10. Laura P Hartman & Abha Chatterjee: Business Ethics, TMH, 2009
11. Tripat Kaur: Values and Ethics in Management, 2/e, Paragon International, 2009.

Learning Outcome: By the end of this course the students should be able to understand the mindset of the entrepreneurs, identity ventures for launching, develop an idea on the legal framework and also understand strategic perspectives in entrepreneurship.

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VAAGDEVI COLLEGE OF ENGINEERING

(AUTONOMOUS)

(A9121) DISASTER MANAGEMENT

(OPEN ELECTIVE-III)

IV Year B.Tech. EEE II-Sem

L	T	P	C
3	0	0	3

Pre-Requisites: None

Course Objectives:

- Understand the difference between a hazard and disaster
- Know about various disasters and their impacts
- Understand different approaches of disaster risk reduction
- Understand disaster risks in India

UNIT 1: Understanding Disaster

1. Concept of Disaster
2. Different approaches
3. Concept of Risk
4. Levels of Disasters
5. Disaster Phenomena and Events (Global, national and regional)

Hazards and Vulnerability

1. Natural and man-made hazards; response time, frequency and forewarning levels of different hazards.
2. Characteristics and damage potential or natural hazards; hazard assessment.
3. Dimensions of vulnerability factors; vulnerability assessment.
4. Vulnerability and disaster risk.
5. Vulnerabilities to flood and earthquake hazards.

UNIT 2 : Disaster Management Mechanism

1. Concepts of risk management and crisis managements.

2. Disaster Management Cycle.
3. Response and Recovery.
4. Development, Prevention, Mitigation and Preparedness.
5. Planning for Relief.

UNIT 3: Capacity Building

1. Capacity Building: Concept.
2. Structural and Nonstructural Measures.
3. Capacity Assessment; Strengthening Capacity for Reducing Risk.
4. Counter-Disaster Resources and their utility in Disaster Management.
5. Legislative Support at the state and national levels.

UNIT 4: Coping with Disaster

1. Coping Strategies; alternative adjustment processes.
2. Changing Concepts of disaster management.
3. Industrial Safety Plan; Safety norms and survival kits.
4. Mass media and disaster management.

UNIT 5: Planning for disaster management

1. Strategies for disaster management planning.
2. Steps for formulating a disaster risk reduction plan.
3. Disaster management Act and Policy in India.
4. Organizational structure for disaster management in India.
5. Preparation of state and district disaster management plans.

Text Books

1. Alexander, D. Natural Disasters, ULC press Ltd, London, 1993.
2. Carter, W.N. Disaster Management: A Disaster Management Handbook, Asian Development Bank, Bangkok, 1991.
3. Manual on Natural Disaster Management in India, NCDM, New Delhi, 2001.

References

1. Abarquez I. & Murshed Z. Community Based Disaster Risk Management: Field Practitioner's Handbook, ADPC, Bangkok, 2004.
2. Goudie, A. Geomorphological Techniques, Unwin Hyman, London 1990.
3. Goswami, S.C Remote Sensing Application in North East India, Purbanchal Prakesh, Guwahati, 1997.
4. Chakrabarty, U.K. Industrial Disaster Management and Emergency Response, Asian Book Pvt. Ltd., New Delhi 2007.
5. Disaster Management in India, Ministry of Home Affairs, Government of India, New Delhi, 2011.
6. National Policy on Disaster Management, NDMA, New Delhi, 2009
7. Disaster Management Act. (2005), Ministry of Home Affairs, Government of India, New Delhi, 2005.
8. District Disaster Management Plan-Model Template, NIDM, New Delhi, 2005.
9. Disaster Management, Future challenge and opportunities, Edited by Jagbir singh, I.K. International publishing home Pvt, Ltd.

Course Outcomes:

After completion of this course, student should be able to

- Acquire the knowledge of disaster Management
- Understand the vulnerability of ecosystem and infrastructure due to a disaster
- Acquire the knowledge of Disaster Management Phases
- Understand the hazard and vulnerability profile of India

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VAAGDEVI COLLEGE OF ENGINEERING

(AUTONOMOUS)

(A9542) CLOUD COMPUTING

(OPEN ELECTIVE-III)

IV Year B.Tech. EEE II-Sem **L T P C**

3 0 0 3

Pre-Requisites: None

Course Objectives:

- This course is to provide students with the comprehensive and in-depth knowledge of Cloud Computing concepts, technologies, architecture and applications by introducing and researching state-of-the-art in Cloud Computing fundamental issues, technologies, applications and implementations.
- Another objective is to expose the students to frontier areas of Cloud Computing and information systems, while providing sufficient foundations to enable further study and research.

Syllabus Content

UNIT-1(1-27)

Introduction: Cloud, emergence of cloud computing, cloud based service offerings, characteristics.

Evolution of Cloud Computing: Hardware evolution, Internet software evolution, Server Virtualization:

Parallel processing, vector processing, symmetric multiprocessing systems, massively parallel processing systems.

UNIT -2 (29-53,57-61)

Web Services Delivered from the cloud: Communication-as-a-Service (CaaS), Infrastructure-as-a –Service (IaaS), Monitoring-as-a-Service (MaaS), Platform-as-a-Service (PaaS), and Software-as-a-Service (SaaS). **Building Cloud Networks**: The Evolution from the MSP Model to cloud computing and Software-as-a-Service

UNIT -3(103-151)

Virtualization Practicum: Downloading Sun xVM Virtual Box, Installing Sun xVM Virtual Box, Adding a Guest Operating System to Virtual Box. **Federation, Presence, Identity, and Privacy in the Cloud:** Federation in the Cloud, Presence in the Cloud, Privacy and its Relation to Cloud-Based Information Systems.

UNIT-4(153-181)

Security in the cloud: Cloud Security Challenges, Software-as-a-Service Security:-Security Management (People), Security Governance, Risk Management, Risk Assessment, Security Portfolio Management, Is security-as-a-Service the new MSSP.

UNIT-5(183-212,213-215,221-223)

Common Standards in Cloud Computing: The Open Cloud Consortium, the Distributed Management Task Force, Standards for Application Developers, Standards for Messaging, and Standards for Security.

End-User Access to Cloud Computing: You Tube, You Tube API Overview, Facebook, Facebook Development.

Text Books:

1. Cloud computing implementation, management and security by John W Rittinghouse, James F Ransome, CRC Press, Taylor & Francis group, 2010.

Reference Books:

1. Cloud Application Architectures by George Reese, Oreilly publishers.
2. Cloud Computing and SOA convergence in your enterprise, by David S. Linthicum, Addison – Wesely.

Course Outcomes:

1. An ability to apply knowledge of mathematics, science and engineering to real world problems.
2. Ability to model, understand and develop complex software for system software as well as application software.
3. An ability to communicate effectively, both in writing and oral.
4. The board education necessary to understand the impact of computer science and engineering solutions in the scientific, societal and human context.
5. A recognition of the need for, an ability to engage in life-long learning.
6. A knowledge of contemporary issues.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

(A9564) COMPUTER ORGANIZATION
(OPEN ELECTIVE-III)

IV Year B.Tech EEE II Semester **L T P C**
3 0 0 3

Prerequisites: None

Objectives:
To make the students learn the fundamentals of computer organization and its relevance to classical and modern problems of computer design, make them understand the structure and behavior of various functional modules of a computer, understand the techniques that computers use to communicate with I/O devices, understand the concepts of pipelining and the way it can speed up processing and to understand the basic characteristics of multiprocessors.

UNIT-1
STRUCTURE OF COMPUTERS: Computer types, Functional units, Basic Operational concepts, Von-Neumann Architecture, Bus Structures, Software, Performance, Multiprocessors and Multicomputer.
REGISTER TRANSFER AND MICRO-OPERATIONS: Register Transfer Language, Register Transfer, Bus and Memory transfers, Arithmetic micro-operations, Logic micro-operations, Shift micro-operations, and Arithmetic logic shift unit.

UNIT-2
BASIC COMPUTER ORGANIZATION AND DESIGN: Instruction codes, Computer registers, Computer instructions, Timing and Control, Instruction cycle, Memory-reference

instructions, Input-Output and Interrupt, Complete Computer Description, Design of Basic Computer, Design of Accumulator Logic.

UNIT-3

MICRO-PROGRAMMED CONTROL: Control memory, Address sequencing, Micro-program example, Design of Control Unit

CENTRAL PROCESSING UNIT: General Register Organsation, Stack organization, Instruction formats, Addressing modes, Data Transfer and Manipulation, Program control, Reduced Instruction Set Computer (RISC).

UNIT-4

COMPUTER ARITHMETIC: Addition and Subtraction, Multiplication and Division Algorithms, Floating-Point Arithmetic Operation, Decimal Arithmetic Unit, Decimal Arithmetic Operations.

UNIT – 5

INPUT-OUTPUT ORGANSATION: Peripheral devices, Input-Output Interface, Asynchronous Data Transfer, Modes of Transfer, Priority Interrupt, Direct Memory Access(DMA)

THE MEMORY SYSTEM: Memory Hierarchy, Main Memory, Auxiliary Memory, Associative Memory, cache memory, virtual memory.

Text Books:

1. "Carl Hamacher, Zvonks Vranesic, SafeaZaky" , Computer Organization, 5th edition, McGraw Hill, New Delhi, India 2002 (Unit-I).
2. "Computer Systems Architecture", 3/e, M. Moris Mano, PEA, 2007 (Unit-II, III, IV, V).

Reference Books:

1. "Computer Organization and Architecture", 8/e, William Stallings, PEA, 2010.
2. "Andrew S. Tanenbaum , Structured Computer Organization", 5th edition, Pearson Education Inc, New Jersy 2006.
3. Sivarama P. Dandamudi , "Fundamentals of Computer Organization and Design", Springer Int. Edition, USA 2003.

Course Outcomes:

CO-3. Ability to model, understands, and develops complex software for system software as Well as application software

CO-7. The broad education necessary to understand the impact of computer science and Engineering solutions in the scientific, societal and human contexts

CO-9. Knowledge of contemporary issues

Learning Outcomes:

1. Understand the basic components of a computer, including CPU, memories, and input/output, and their organization, Ability to use memory and I/O devices effectively.
2. Understand the cost performance tradeoff in designing memory hierarchy and instruction sets, able to explore the hardware requirements for cache memory and virtual memory.

3. Understand and be able to use assembly languages for solving simple problems. Understand the relationship between high level language and assembly language.
4. Able to follow the trends in computer design and appreciate the design philosophy behind.

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