ACADEMIC REGULATIONS, COURSE STRUCTURE AND DETAILED SYLLABUS

COMPUTER SCIENCE &ENGINEERING

For

B.TECH. FOUR YEAR DEGREE COURSE

(Applicable for the batches admitted from 2018-2019)

JAYAMUKHI INSTITUTE OF TECHNOLOGICALSCIENCES

(UGC-AUTONOMOUS)

Narsampet, Warangal (Rural) – 506 332
Telangana State, India

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)
NARSAMPET, WARANGAL(Rural) – 506 332.T.S.

Academic Regulation-2018 of B.Tech (Regular) Programme under Choice Based Credit System (CBCS)

(EffectiveforthestudentsadmittedintoI-YearfromtheAcademicyear2018-2019)

1. Award of B.Tech.Degree

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

i) Pursued a course of study for not less than four academic years and not more than eight academicyears.

ii) Register for **160** *credits and should secure* **160** *credits. A student will be eligibletogetB.Tech.DegreewithHonors,ifhe/shecompletesanadditional 20creditsthrough***MassiveOnlineOpenCourses(MOOCs).***Eachsubject offered by UGC/AICTE/NPTEL/NEC or equivalent carries 2credits.*

iii) *A Student can earn 2 credits by active participation in NSS.As no grade is definedforthese2creditstheyarenotincludedinCGPACalculations.Based on their participation in NSS activities, the student can earn maximum of 100 activity points as specified in the***Annexure.**

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, shallforfeittheirseatinB.Techcourseunlessextensionisgrantedby College Academic Council (CAC) to complete the course for a furtherperiod.

2. Courses ofStudy

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

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

3. Credits:

All subjects/ courses are to be registered by a student in a semester to earncredits.Creditsshallbeassignedtoeachsubject/courseinaL:T:P:C (Lecture Periods: Tutorial Periods: Practical Periods: Credits) structure, based on the followingtable.

1 Hr. Lecture (L) per week	*1 credit*
1 Hr. Tutorial (T) per week	*1 credit*
1 Hr. Practical (P) per week	*0.5 credit*
2 Hr. Practical (Lab) per week	*1 credit*

4. Subject / Course Classification:

S.No.		Credits
1	*Humanities and Social Sciences including Management courses*	*12**
2	*Basic Science courses*	*25**
3	*Engineering Science courses including workshop, drawing, basics of electrical/mechanical/computer etc.*	*24**
4	*Professional core courses*	*48**
5	*Professional Elective courses relevant to chosen specialization / branch*	*18**
6	*Open subjects-Electives from other technical and / or emerging subjects*	*15**
7	*Project work, seminar and internship in industry or elsewhere*	*15**
8	*Mandatory courses [Environmental Sciences, Induction Program, Indian Constitutional, Essence of Indian Traditional Knowledge]*	*Non-Credit*
	Total (%)	**160 (100%)**

**Minor variation is allowed as per need of the respectivedisciplines*

5. CourseRegistration:

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 careerobjectives.

Faculty advisor shall be only from the engineering departments. With the advice and consent of the Faculty Advisor the student shall register for a setofcourseshe/sheplanstotakeupforeachSemester.

The student should meet the criteria for prerequisites to become eligible to register for thatcourse.

A student is allowed to register for more than 160 credits in completion of B.Tech. programme. However, additionalcredits 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).Forsuchextrasubject(s)registeredalettergradealone willbeindicatedinteGradecardasaperformancemeasure.

6. Subjects / Courses to beoffered:

Students shall have to register for the courses during the preparation and practical examinations of the previous semester. However for the firstyear, thestudentshavetoregisterforcourseswithinaweekfromthe commencement of classwork.

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

The information on list of all the elective courses offered in every department specifying the credits, the prerequisites, a brief description ofsyllabusorlistoftopicsandthetimeslotshallbemadeavailabletothe student intime.

In any department, preference for registration shall be given to those studentsofthatdepartmentforwhomthecourseisacorecourse.

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 registeredshallbebasedontheclassroomandlaboratorycapacity.Every effort shall be made by the Department/Centre to accommodate as many students aspossible.

No course shall be offered unless there is a minimum of 20 students or one half of the class strengthspecified.

7. ProgrammePattern:

i. Theentirecourseofstudyisoffouracademicyears.Allyearsshallbeon semester pattern i.e two semesters per year. For each semester there shall be a minimum of 90 instructiondays.

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 supplementaryexamination.

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

8. Distribution and Weightage ofMarks:

ThePerformanceofastudentineachsemestershallbeevaluatedsubject-wisewithamaximumof100marksfortheoryand100marksforpractical subjects. In addition, Industry oriented mini-project, Seminar, ComprehensiveViva-Voce and Major Project Work shall be evaluated for 100marks.

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

For theory subjects, during the semester there shall be 2 mid-term examinations(internalexams)andtwoassignmentscarrying5markseach.

Each mid-term examination of 90 minutes consists of Part-A (objective type- 16 x 0.5) for 8 marks and Part-B (subjective paper) for 12 marks. Part-B shall contain 5 questions out of which the student has to answer 3 questionsofeach4marks.Firstmid-termexaminationshallbeconducted 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 blanksetc.

ForthesubjectGenderSensitization30marksareallottedforassignments and 70 marks are allotted for mid examination. Mid examination consists of questions and student has to answer 5 questions of 14 marks ofeach.

First set of Assignment should be submitted before the conduct of the first mid-term examination and the second set of Assignment should be submitted before the conduct of the second mid-term examination. The assignmentsshallbeasspecifiedbytheconcernedsubjectteacher.

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. After adding 70% of the marks obtained in the first or second set whichever is higher and 30% of marks obtained in the first or second set whicheverisloweraretobeconsideredforawardinginternalmarks.

The details of the Question Paper pattern for theory examination is as follows:

(i) Theendsemestersexamwillbeconductedfor70Markswhichconsistof two parts viz. Part-A for 20 Marks and Part-B for 50Marks.

(ii) Part-A is compulsory question which consist of 5 Sub-questions, one from each unit, carrying 4 Markseach.

(iii) Part-B consist of 5 questions (numbered from 2 to 6) carrying 10 marks each. Each of these questions, there will be an either or choice(i.e There will be two questions from each unit and student will answer any one question).

Forpracticalsubjectsthereshallbeacontinuousinternalevaluationduring 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 respectiveBranches.

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 endexamination.

There shall be a mini project preferably suggested by the industry of their specialization. The mini project shall be submitted in a report form and should be presented before the committee, which shall be evaluated for 100marks.ThecommitteeconsistsofHeadoftheDepartment,Supervisor ofminiprojectandaseniorfacultymemberofthedepartment.

There shall be a seminar presentation by the student. For the seminar, thestudentshallcollecttheinformationonaspecializedtopicandprepare 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 100marks.

There shall be an internship suggested by the industry of their specializatiion. After completing their internship stdentshould submit a report in the department, which shall be evaluated by the department for 100marks.

The Comprehensive Viva-Voce and Evaluation : The Comprehensive Viva-Vocewill be conducted by a Committeecosisting of (i) Head of the Department. (ii) Two Senior Faculty Members of the Department. The ComprehensiveViva-Voce is imed 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 theCommittee.

Out of a total of 100 marks for the major project work, 30 marks shall be for internal evaluation and 70 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 ofthe

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.

There shall be an optional third midterm examination and interested students can register for third mid examination by paying prescribed registration fee, which covers entire semester syllabus carrying 25 marks and assignment 5 markseach.

For evaluation of internal marks the marks obtained in best two midterm examinations will be considered.

9. AttendanceRequirements:

Astudentshallbeeligibletoappearfortheendexaminationsifheacquires aminimumof75%ofaggregateattendanceinallthesubjects.

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 thePrincipal.

Shortageofattendancebelow65%shallinnocasebecondoned.

Studentfallingshortofattendanceasspecifiedabovewillbedetained.

Astudentwillnotbepromotedtothenextsemesterunlesshe/shesatisfies 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;incasethereareanyprofessionalelectivesand/oropenelectives, the same may also be re-registered if offered. However, if those electives arenotofferedinlatersemesters,thenalternateelectivesmaybechosen 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 ofattendance.

10. Minimum AcademicRequirements:

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

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/she 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.

Promotion Rules:

S.No.	Promotions	Conditions to be fulfilled
1.	*First Year first semetser to first year second semester*	*Regular Course of study of first year first semetster*
	Firstyearsecondsemeterto secondyearfirstsemester	*(i) Regular course of Study of first year semester (ii) Must have secured atleast 20 credits out of 40 credits i.e. 50% credits upto first year second semester from all relevant regular and supplementary examinations, whichever the student takesthose examinations or not*
2. `	*Secondyearfirstsemesterto secondyearsecondsemester*	*Regular course of study of second year first semester*
	Secondyearsecondsemester tothirdyearfirstsemester	*(i) Regular course of study of second year secondsemester (ii) Musthavesecuredatleast48creditsout of 80 credits i.e. 60% credits upto second year second semester from all relevant regularandsupplemenataryexaminations, whether the student takes thoseexamina tions or not*
3.	*Third year first semester to third year second semester*	*Regular course of study of third year first semester.*
	Third year second semester to fourth year first semester	*(i) Regular course of study of third year secondsemester (ii) Musthavesecuredatleast72creditsoutof 120creditsi.e.60%creditsuptothirdyearsec- -ondsemesterfromallrelevantregularand supplemenatary examinations, whether the stu denttakesthoseexaminationsornot*
	Fourthyearfirstsemesterto fourth year secondsemester	*Regular course of study of fourth year first semester.*

A student shall register for all subjects covering 160 credits as specified andlisted(withtherelevantcourse/subjectsclassificationsasmentioned) in the course structure, put up all the attendance and academic requirementsandsecuringaminimumofCGrade(PassGrade)orabove in each subject, and earn 160 credits securing Semester Grade Point Average (SGPA) $\geq$5 in each semester, and Cumulative GradePoint

Average (CGPA) $\geq$5 at the end of each successive semester to successfully complete the B.Tech Programme.

When a student is detained due to shortage of attendance in any semester, he/she 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 willbedoneforthatentiresemesterinwhichhegotdetained.

When a student is detained due to lack of credits in any year, he/she may be readmitted in the next year, after fulfillment of the academic requirements, with the academic regulations of the batch into which he getsreadmitted.

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 C Grade or above), may reappear for that subject/course at the supplementary examinations as and when conducted. In such cases, his/her internal marks assessed earlier for that subject/course will be carriedover,andaddedtothemarkstobeobtainedinthesupplementary examination, for evaluating his performance in thatsubject.

11. GradingProcedure

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,Internshipbasedonthe%ofmarksobtainedinEndexamination, bothtakentogetherasspecifiedinitemNo.07aboveandacorresponding Letter Grade shall begiven.

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 befollowed.

Grades and Grade Points

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

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 InternalMarksinthoseSubject(s)willremainsameasthoseheobtained earlier.

A Letter Grade does not imply any specific % ofMarks.

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/she has to repeat all the Subjects/Courses pertaining to the Semester, when he/she is detained (as listed in Item No. 10.7 -10.8).

AstudentearnsGradePoint (G.P.) ineachSubject/Course,onthebasis 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 particularSubject/Course.

Credit points (C.P.) = Grade Points (G.P.) X Credits For a Course

ThestudentpassestheSubject/Courseonlywhenhe/shegets G.P.$\geq$5 (C Grade and above).

TheSemesterGradePointAverage(SGPA)iscalculatedbydividingthe SumofCreditPoints (C.P.)SecuredfromAllSubjects/Coursesregistered in a semester, by the total number of credits registered during that semester. SGPA is rounded off to Two Decimal Places. SGPA is thus computedas

$\left\{\sum_{i=1}^{N} C_i G_i\right\} / \left\{\sum_{i=1}^{N} C_i\right\}$... *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 represents the Grade Points (G.P.) corresponding to the Letter Grade awarded for thati^{th} Subject.

TheCumulativeGradePointAverage(CGPA)isameasureoftheoverall cumulative performance of a student over all Semesters considered for registration. The CGPA is the ratio of the Total Credit Points secured by a student in all registered Courses (with an exemption of 6 credits in electives subjects) in all semesters. CGPA is rounded off to two decimal places. CGPA, is thus computed from the I year, Second-Semester onwards, at the end of each semester, as per theformula.

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

Where ' M ' is the total No. of Subjects (as specifically required and listed under the Course Structure of the parent Department) the student has 'REGISTERED' from the 1st Semester onwards upto and inclusive of the semester S (obviously M > N), 'j' is the subject indicator index takes into account all subjects from first Subject and G_j *represents the GradePoints(GP)correspondingtotheLetterGradeawardedforthatj*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 cumulativeeffects.*

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

*For calculation listed in item No.11.6 - 11.10***,** *performance in failed subjects/Courses (Securing F Grade) will also be taken into account and the credits of such Subjects/Courses will also be included in the multiplications andsummations.*

12. Passing Standards:

A student shall be declared successful or 'passed' in a Semester only when he gets a SGPA ≥ 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* ≥ 5*; subject to the condition that he secures a GP* ≥ 5 *(C Grade or above) in every registered Subject/ CourseineachSemester(duringtheB.TechProgramme)fortheDegree Award asrequired.*

In spite of securing C Grade or above in some (or all) Subjects/Courses in any Semester, if a Student receives a SGPA <5 and /or CGPA <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 thePrincipal.

i.) To go into the next subsequent Semester (Subject to fulfilling all other attendance and academic requirements as listed under items No.9- 10).

ii.) To 'improve his SGPA of such a Semester (and hence CGPA to 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 C Grade (s) in that semester,at the supplementary examinations to be held in the next subsequent semester(s). In such cases, his/her 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 calculationofSGPAandCGPA,onlyifthereisanimprovement.

A Student shall be declared successful or 'passed' in any Mandatory (non-credit)Subject /Course, by appearing and pass in the examination conducted by the institute like credit courses and fulfill minimum attendancerequirement.

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 andCGPA.

13. Declaration of Results:

Computation of SGPA and CGPA are done using the procedure listed in Item no.11.6 –11.10.

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

% of Marks = (Final CGPA) X 10

14. Revaluation and Re-Counting:

A student can apply for re-counting for the appeared theory subjects withinthespecifiedtimeperiodgivenbycontrollerofexaminations.

A student can apply for revaluation through prescribed application to the controller of examinations within specified time period; however the student can apply revaluation of the answer scripts not exceeding two theory subjects in asemester.

15. Award of Degree under CBCS:

A student will be declared eligible for the award of the B.Tech. Degree if he/she fulfills the following academicregulations:

i) Pursued a course of study for not less than four academic years andnot more than eight academicyears.

ii) Registerfor160creditsandsecure160credits.Astudentwillbeeligible to get B.Tech. Degree with Honours, if he/she completes an additional 20 credits through Massive Online Open Courses(MOOCs).

iii) Students,whofailtofulfillalltheacademicrequirementsfortheawardofthe degreewithineightacademicyearsfromtheyearoftheiradmission,shall forfeittheirseatinB.Techcourseunlessextensionisgrantedforafurther periodbyCollegeAcademicCouncil(CAC)tocompletethecourse.

AstudentwhoqualifiesfortheAwardoftheDegreeasper **item13.2** *shall be placed in the following classes.*

Award of Division

S.No.	Division	CGPA
1.	*First class with Distinction*	*≥7.5*
2.	*First Class*	*≥6.5 but less than 7.5*
3.	*Second Class*	*≥5.5 but less than 6.5*
4.	*Pass Class*	*≥5 but less than 5.5*

A student with final CGPA (at the end of the Course) < 5 will not be eligible for the Award of theDegree.

16. Withholding of Results:

If the student has not paid fees to University/College at any stage or has pending dues against his/her name due to any reason whatsoever, or if anycaseofindisciplineispendingagainsthim/her,theresultofthestudent maybewithheld,andhe/shewillnotbeallowedtogointothenexthigher semester. The Award or issue of the Degree may also be with held in suchcases.

17. Transitory Regulations:

Studentwhohasdiscontinuedforanyreason,orhasbeendetainedforwant ofattendanceorlackofrequiredcreditsasspecified,orwhohasfailedafter havingundergonethedegreeprogramme,maybeconsideredeligiblefor readmissiontothesamesubject/course(orequivalentsubjects/courses,as thecasemaybe),andsameProfessionalElectives/OpenElectives(orfrom set/categoryofelectivesorequivalentssuggested,asthecasemaybe)as andwhentheyareoffered(withinthetime-frameof8yearsfromthedateof commencement of his I year ISemester).

Details of Transitory regulations :

Admission with advance standing : *These may arise in the following cases :*

1. *When a student seeks transfer from other college to Jayamukhi Institute of Technological Sciences (JITS) and desires to pursue study at JITS in an eligible branch ofstudy.*
2. *When students of JITS get transferred from on regulation to another regulation or from previous syllabus to revisedsyllabus.*
3. *When as student after long discontinuity rejoins the college to complete his Programme of study for the award of adegree.*

I. TransitoryRegulations:*Forstudentsadmittedunderadvancestanding, these transitory regulations will provide the modus iperandi. At the time ofsuchadmission,basdontheProgrammepursued(casebycase).*

1. *Equivalent courses completed by the student are established by the Chairman, BOSconcerned.*
2. *Marks/Credits are tranferred for all such equivalent courses and treated assuccessfullyclearedintheProgrammestudyprescribedbyJITS.*
3. *A Programme chart of residual courses not cleared will be derived and a Programmeofstudywithdurationspecifiedwillbeprescribedforpursuing atJITS.*
4. *Marks obtained in the previous systtem if the case be, are converted to grades and accordingly CGPA is calculated. All other modalities and regulationsgoverningshallbethesameasthoseapplicabletothestream of students with whom such a candidate ismerged.*

5. *The students those who are on rolls to be provided one chance to write the internal exams in the* **subjects not studied,** *as per the clearance letter (equivlence) issued by Chairman,BOS.*

6. *After the revision of the regulations, the students of the previous batches will be given two subsequent chances for passing in their failed subjects, one supplementary and the other regular. If the students cannot clear the subjects in the given two chances, they shall be given equivalent subjects as per the revised regulations which they have to pass in order toobtaintherequirednumberofcreditswithinstipulatedperiod.*

7. *When the student seeks admission into the course,his/her eligibility to the year of admission is based on his eligibility criteria of the previous institution where he studied earlier, subject to the ratification of TSCHE and JNTUH. Once he/she admitted after scrutiny the rules of JITS applicable from the date ofadmission.*

8. *When the student seeks admission from JNTUH regulations to autonomous regulations, the eligibility criteria to the year of admission is based on the eligibility criteria of JNTUH regulations for the batch in whichhe/sheadmitted.Aftertakingadmissiontheautonomousregulations areapplicableforthesubsequentpromotiontothenextacademicyear.*

II. Transitory Regulations for the students who have discontinued the programme:

1. *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 failedafterhavingundergonethedegreeprogramme,maybeconsidered eligibleforreadmisiontothesamesubject/course(orequivalentsubjects/ courses, as the case maybe).*

2. *The student is permitted to register for ProfessionalElectives/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 8yearsfromthedateofcommencementofhisIyearISemester).*

Scope :

1. *The academic regulations should be read as a whole, for the purpose of anyinterpretation.*

2. *In case of any doubt or ambiguity in the interpretation of the above rules, the decision of the Principal isfinal.*

3. *JITS may change or amend te academic regulations, course structure or syllabi at any time, and the changes or amendments made shall be applicabletoallstudentswitheffectfromthedaterofnotified.*

18. 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 anyinterpretation.*

iv. *In case of any doubt or ambiguity in the interpretation of the above rules, thedecisionoftheChairman,CollegeAcademicCouncilisfinal.*

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.

AcademicRegulationsforB.Tech.(LateralEntryScheme)

(Effective for the students getting admitted into II-Year from the academic year 2019-2020 and on wards)

1. *ThestudentsadmittedtoB.Tech.ProgrammeunderLateralEntrySceme will pursue the course for not less than three academic years and not more than six academicyears.*
2. *The students have to acquire all credits (Total 120) from II to IV year of B.Tech.Program(Regular)fortheawardofthedegree.Registerallcredits and secure allcredits.*
3. *A student will be eligible to get B.Tech. Degree with Honours, if he/she completesanadditional20creditsthroughMassiveOnlineOpenCourses (MOOCs).*
4. *A student can earn 2 credits by active participation in NSS. As no grade is defined for these 2 credits they are not included in CGPA calculations. Based on their participation in NSS acibities, the student can earn maximum of 100 activitypoints.*
5. *Student, who fails to fulfill the requirements for the award of the degree insixconsecutiveacademicyearsfromtheyearofadmission,shallforfeit his seat unless extension is granted by the College Academic Council to complete the Programme for a furtherperiod.*
6. *The same attendance regulations are to be adopted as that of B.Tech. (Regular).*

7. Promotion Rules:

S.No.	Promotions	Conditions to be fulfilled
1.	*Second year first semester to second year second semester*	*Regularcourseofstudyofsecondyear firstsemester*
	Second year second semester to third year first semester	*(i) Regular course of study of second year secondsemester* *(ii) Musthavesecuredatleast20credits out of 40 credits i.e., 50% credits upto second year second semester from all relevant regular and supplementary examinations, whether the student takes those examinations ornot*
2.	*Thirdyearfirstsemestertothird year secondsemester*	*Regular course of study of third year first semester*
	Third year second semester to fourth year first semester	*(i) Regularcourseofstudyofthirdyear secondsemester* *(ii) Must have secured atleast 48 cred-itsoutof80creditsi.e.,60%creditsupto thirdyearsecondsemesterfromallrel-evant regular and supplementary ex-aminations, whether the student takes those examinations ornot*
	Fourth year first semester to fourth year second semester	*Regular course of study of fourth year first semester*

8. AllotherregulationsasapplicableforB.Tech.IVyeardegreecourse (Regular) will hold good for B.Tech. (Lateral EntryScheme)

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 thestudentswitheffectfromthedatesnotifiedbytheCollegeAuthorities.

MALPRACTICES RULES

DISCIPLINARY ACTION FOR / IMPROPER CONDUCT IN EXAMINATIONS

	Nature of Malpractices/Improper Conduct	Punishment
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 of related to the subject of the examination (theory or practical) in which he is appearingbuthasnotmadeuseof(mate- rial shall include any marks on the bodyofthecandidatewhichcanbe usedasanaidinthesubjectofthe examination)*	*Expulsionfromtheexaminationhall and cancellation of the performance in that subjectonly.*
(b)	*Gives assistance or guidance or receivesitfromanyothercandidate 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 anymatter.*	*Expulsionfromtheexaminationhall and cancellation of the performanceinthatsubjectonlyofallthe candidtes involved. In case of an outsider, he will be handed over to the police and a case isregistered againsthim.*
2.	*Has copied in the examinationhall fromanypaper,book,programmale calculators,palmcomputersorany otherformofmaterialrelevanttothe subject of the examination (theory orpractical)inwhichthecandidate isappearing.*	*Expulsionfromtheexaminationhall and cancellation of the performanceinthatsubjectandallother subjectsthecandidatehasalready appeared including practical examinationsand project work and shallnotbepermittedtoappearfor the remaining examinations of the subjects of thatSemester. The Hall Ticket of the candidate is to be canelled.*

3.	*Impersonates any other candidate inconnectionwiththeexamination.*	*The candidate who has impersonatedshallbeexpelledfromexamination hall. The candidate is also debarredandforfeitstheseat.The performance of the original candidate,whohasbeenimpersonated, shall be cancelled in all the subjects of the examination (including practicalsandprojectrork)already appearedandshallnotbeallowed to appear for exminations of the remaining subjects of that semester/year. The candidate is also debarred for two consecutivesemesters from class work and all University examinations. the continuation of the course by the candidate is subject to the academic regulations in connection with forfeitureofseat.Iftheimposterisan outsider, he will be handed overto the police and a case isregistered againsthim.*
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.*	*Expulsionfromtheexaminationhall and cancellation of the performanceinthatsubjectandallother subjectsthecandidatehasalready appeared including practical examinationsand project work and shallnotbepermittedtoappearfor the remaining examinations of the subjectsofthatSemester/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 totheacademicregulationsinconnection with forfeiture ofseat.*

5.	Uses objectionable, abusive or offensivelanguageintheanswerpaperorinletterstotheexaminers or writes to the examiner requesting him to award passmarks.	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 disturbanceofanykindinandaroundthe examination hall or organizes a walkoutorinstigatesotherstowalk out, or threatens the officer-in charge or any person on duty in or outsidetheexaminationhallofany injury to his person or to any of his relations whether by words, either spoken or written or by signs or by visible represenation, 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 misconductormischiefwhichresultindamage to or destrction of property in theexaminagionhalloranypartof the College campus or engages in any other act which in the opinion of the officer on duty amounts to use of unfair means ormisconduct or has the tendency to disruptthe orderlyconductoftheexamination.	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 permittedtoappearfortheremainingexaminations of the subjects of that semester/year.Thecandidatesalso aredebarredandforfeittheirseats. In case of outsiders, they will be handed over to the police and a police case is registered against them.
7.	Leaves the exam hall taking away answer script or intentially tears of thescriptoranypartthereofinside or outside the examinationhall.	Expulsionfromtheexaminationhall and cancellation of performancein 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 examinationsofthesubjectsofthat 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 ofseat.

8.	*Possess any lethal weapon or fire-arm in the Examination hall.*	*Expulsionfromtheexaminationhall and cancellation of performancein 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 examinationsofthesubjectsofthat Semester/year. The candidate is alsodebarredandforfeitstheseat.*
9.	*Ifstudentofthecollege,whoisnot acandidatefortheparticularexamination oranypersonnotconnected with the college indulges in any malpractice or improper conduct mentioned in clause 6 to8.*	*Student of the colleges expulsion fromtheexaminationhallandcancellation of performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be permittedfortheremainingexaminations of the subjects of that Semester/year.Thecandidateisalso debarred and forfeits theseat. Peson(s)whodonotbelongtothe College will be handed over to police and, a police case will be registered againstthem.*
10.	*Comesinadrunkenconditiontothe examinationhall.*	*Expulsionfromtheexaminationhall and cancellation of performancein 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 examinationsofthesubjectsofthat Semester.*
11.	*Copying detected on the basis of internal evidence, such as, during valuationorduringspecialscrutiny.*	*Cancellationofperformanceinthat subject and all other subjects the candidate has already appeared including practical examinations andprojectworkofthatSemester/ yearexamination.*
12.	*Ifanymalpracticeisdetectedwhich isnotcoveredintheaboveclauses 1 to 11 shall be referred to Examination Result Processing Committee(ERPC)furtheractiontoaward suitablepunishment.*	

ANNEXURE

NSS ACTIVITY EVALUATION PROCEDURE

The college shall consolidate the activity points earned by the students from his/her first year on an academic year basis and enter the consolidated marks at the end of the student's course completion. For lateral entry students the markswillbeconsolidatedfromthirdsemestertotheendofthestudentcourse completion. The consolidated marks will be evaluated for max of 100 marks as per the evaluation sheet for lateral entry students. The college online portal shall be open for a specific time period with prior intimation to enter the activity marks. All documental proof for awarding the activity marks shall be submitted andverifiedbyNSSauthoritiesofthecollegebeforeawardingthepointstothe student. Each activity points earned will be evaluated as one mark during final consolidaton ofmarks.

THE MAIN ACTIVITY SEGMENTS ARE LISTED BELOW

1. *NationalInitiatives*
2. *Sports andGames*
3. *CulturalActivities*
4. *Leadership andmanagement*

The following table gives list of activities under each of these segments, the level of achievement, activity points, evidence needed to assign the points and the minimum duration needed for certain activities.

AdditionalActivitieswillbeupdatedonregularbasisaspertheNSShandbook issued by the state government NSSunit.

Activity Head	Sl. No.	Activity	Achievement levels and Assigned Activity points					** Approval Documents	Maximum points
		* Level	I	II	III	IV	V		
National Initiatives Participation	1.	Cleanliness Drive	5	10	15	20	25	a & b	25
	2.	Children Aware--ness Programme	5	10	15	20	25	a & b	25
	3.	Health Awareness Programme	5	10	15	20	25	a & b	25
	4.	Environment Prot--ection Programme	5	10	15	20	25	a & b	25

Activity Head	Sl. No.	Activity	Achievement levels and Assigned Activity points					** Approval Documents	Maximum points
Sports and Games		* Level	I	II	III	IV	V		
	1.	Organised by NCC or Government Body For participation	5	10	15	20	25	a & b	25
		First Prize	10	15	20	25	30	a,b & c	30
		Second Prize	8	13	18	23	28	a,b & c	28
		Third Prize	6	11	16	21	26	a,b & c	26
Cultural Activities	1.	Music	5	10	15	20	25	a	25
	2.	Performing Arts	5	10	15	20	25	a	25
	3.	Leterary Arts	5	10	15	20	25	a	25
Leadership and Management	1.	Free Medical Camp	5	10	15	20	25	a,b,c & d	25
	2.	Rural Assistance Camp	5	10	15	20	25	a,b,c & d	25
	3.	Education&Career CounsellingCamp	5	10	15	20	25	a,b,c & d	25
	4.	NSS special Camp	5	10	15	20	25	a,b,c & d	25
	5.	Drives organised by Govt. bodies for Social Awareness	5	10	15	20	25	a,b,c & d	25
	6.	Social Survey Camp by NSS							

* Level I - College Events
* Level II - Zonal Events
* Level III - State / UniversityEvents
* Level IV - NationalEvents
* Level V - InternationalEvents

** Approval Documents : (a) Certificate, (b) Letter from Authorities, (c) Appreciation recognition Letter, (d) Documentary evidence.

MOOCS EVALUATION PROCEDURE

A student will be eligible to get under graduatedegree with honours if he/she completeanadditional20creditsacquiredthroughMOOCSasdirectedbyAICTE andUGC.Theadditional20creditscanbeearnedbythestudentbysuccessfully registering and completing the courses offered by the following government agency.

1. *SWAYAM*
2. *UGC*
3. *NPTEL*
4. *IGNOU*
5. *NIOS*

5. CEC

On successful completion of the course, the student have to submit his/her certificatesissuedbytheabovegovernmentagencytoreviewcommitteeframed by Principal and HODs. The approval of the review committee for each course will earn 2 credits to his/her curriculum. Additionalcourses will be updated on regular basis as per the AICTE and UGCguidelines.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(UGC-AUTONOMOUS)

COURSE STRUCTURE

(Applicable for the batches admitted from A.Y. 2018-2019 onwards)

IYEAR **ISEMESTER**

S.No.	Subject Code	Subject	Marks		L	T	P	Credits
			Internal	External				
1	J1001	Mathematics-I	30	70	3	1	0	4
2	J1007	Engineering Physics	30	70	3	1	0	4
3	J1008	Engineering Chemistry	30	70	3	1	0	4
4	J1302	Engineering Graphics	30	70	1	0	4	3
5	J1501	Programming for Problem Solving	30	70	3	1	0	4
6	J1502	ProgrammingforProblemSolvingLab	30	70	0	0	3	1.5
7	J1009	EngineeringPhysics&ChemistryLab	30	70	0	0	3	1.5
		Total Credits			**13**	**04**	**10**	**22**

I YEAR **IISEMESTER**

S.No.	Subject Code	Subject	Marks		L	T	P	Credits
			Internal	External				
1	J2002	Mathematics-II	30	70	3	1	0	4
2	J2202	Basic Electrical & Electronics Engineering	30	70	2	1	0	3
3	J2011	English	30	70	2	0	0	2
4	J2503	Object Oriented Progamming	30	70	3	0	0	3
5	J2504	Object Oriented Progamming Lab	30	70	0	0	3	1.5
6	J2203	Basic Electrical & Electronics Engineering Lab	30	70	0	0	3	1.5
7	J2012	English Language & Communication Skills Lab	30	70	0	0	2	1
8	J2507	IT & Engineering Workshop	30	70	1	0	2	2
		Total Credits			**11**	**02**	**10**	**18**

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COURSE STRUCTURE
(Applicable for the batches admitted from A.Y. 2018-2019 onwards)

II YEAR -ISEMESTER IIISEMESTER

S.No.	Subject Code	Subject	Marks		L	T	P	Credits
			Internal	External				
1	J3005	Probability & Statistics	30	70	3	1	0	4
2	J3409	Digital System Design	30	70	3	0	0	3
3	J3419	Computer Organization	30	70	3	0	0	3
4	J3E12	Organizational Behaviour	30	70	2	1	0	3
5	J3508	Data Structures	30	70	3	0	0	3
6	J3509	Data Structures Lab	30	70	0	0	4	2
7	J3510	Scripting Language Lab	30	70	0	0	4	2
		Total Credit			**14**	**2**	**8**	**20**
8	JMC01	Environmental Sciences ***(Mandatory Course)***	**30**	**70**	**3**	**0**	**0**	**0**

II YEAR -IISEMESTER IVSEMESTER

S.No.	Subject Code	Subject	Marks		L	T	P	Credits
			Internal	External				
1	J4004	Discrete Mathematics	30	70	3	1	0	4
2	J4511	Design & Analysis of Algorithms	30	70	3	0	0	3
3	J4512	Java Programming	30	70	3	0	0	3
4	J4513	Operating Systems	30	70	3	0	0	3
5	J4514	FormalLanguages&AutomataTheory	30	70	3	0	0	3
6	J4515	Java Programming Lab	30	70	0	0	4	2
7	J4516	Operating Systems Lab	30	70	0	0	3	2
		Total Credits			**15**	**01**	**10**	**20**
8	JMC02	Gender Sesitization ***(Mandatory Course)***	100	0	2	0	0	0

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COURSE STRUCTURE
(Applicable for the batches admitted from A.Y. 2018-2019 onwards)

III YEAR,ISEM VSEMESTER

S.No.	Subject Code	Subject	Marks		L		P	Credits
			Internal	External				
1	J5518	Database Management Systems	30	70	3	0	0	3
2	J5519	Principles of Programming Languages	30	70	2	1	0	3
3	J5454	Micro Processors and Interfacing	30	70	3	0	0	3
4	J5520	Web Programming	30	70	3	0	0	3
5	J5521 J5522 J5523	**Professional Elective - I** 1. ArtificialIntelligence 2. Adhoc & Sensor Networks 3. GraphTheory	30	70	3	0	0	3
6	J5455	Microprocessors & Interfacing Lab	30	70	0	0	2	1
7	J5525	Database Management System Lab	30	70	0	0	4	2
8	J5526	Web Programming Lab	30	70	0	0	4	2
		Total Credits			**14**	**01**	**10**	**20**
9	JMC03	(Constitution of India) **(Mandatory Course)**	30	70	3	0	0	0

III YEAR,IISEM VISEMESTER

S.No.	Subject Code	Subject	Marks		L	T	P	Credits
			Internal	External				
1	J6527	Compiler Design	30	70	2	1	0	3
2	J6528	Computer Networks	30	70	2	1	0	3
3	J6529 J6530 J6531	**Professional Elective - II** 1. MachineLearning 2. ObjectOrientedanalysis&design 3. AdvancedDatabases	30	70	2	1	0	3
4	J6533 J6534 J6535	**Professional Elective - III** 1. DistributedComputing 2. High PerformanceComputing 3. SoftwareEngineering	30	70	3	0	0	3
5		**Open Elective - I**	30	70	3	0	0	3
6	J6536	ComplierDesign/ComputerNetworksLab	30	70	0	0	4	2
7	J6537	OOAD Lab	30	70	0	0	4	2
8	J6580	Internship	100	---	0	0	2	1
		Total Credits			**12**	**03**	**10**	**20**

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
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COURSE STRUCTURE

(Applicable for the batches admitted from A.Y. 2018-2019 onwards)

IV YEAR,ISEM VIISEMESTER

S.No.	Subject Code	Subject	Marks		L		P	Credits
			Internal	External				
1	J7538	Data Mining	30	70	3	0	0	3
2		**Open Elective - II**	30	70	3	0	0	3
3	J7542 J7543 J7544	**Professional Elective - IV** 1. NetworkProgramming 2. Secure SoftwareEngineering 3. PatternRecognition	30	70	2	1	0	3
		Professional Elective - V						
4	J7545 J7547 J7548	1. MobileComputing 2. CloudComputing 3. Software Testing Methodologies	30	70	2	1	0	3
	J7549	Data Mining Lab	30	70	0	0	4	2
	J7550	Network Programming Lab	30	70	0	0	4	2
5	J7581	Mini Project	100	---	0	0	8	4
6	J7582	Technical Seminar	100	---	0	0	2	1
		Total Credits			**10**	**02**	**18**	**21**

IV YEAR,IISEM VIIISEMESTER

S.No.	Subject Code	Subject	Marks		L	T	P	Credits
			Internal	External				
1		**Open Elective - III**	30	70	3	0	0	3
2		**Open Elective - IV**	30	70	3	0	0	3
3	J8559 J8560 J8561 J8562	**Professional Elective - VI** 1. SemanticWeb&SocialNetworks 2. E-Commerce 3. Software ProjectManagement 4. Optimization Techniques	30	70	2	1	0	3
4	J8583	Comprehensive Viva-Voce	100	---	0	0	4	2
5	J8584	Major Project	30	70	0	0	16	8
		Total Credits			**8**	**1**	**20**	**19**
	J8585	**NSS***			**0**	**0**	**0**	**2**

*Academic Regulation, Item No. 01 (iii)

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(UGC-AUTONOMOUS)

LIST OF OPEN ELECTIVES OFFERED AT COLLEGE LEVEL

S. No.	Subject Code	Subject
1	J_150	Remote Sensing & GIS
2	J_151	Traffic Engineering and Transportation Planning
3	J_152	Disaster Preparedness & Planning
4	J_153	Environmental Imapact Assessment
5	J_219	Control Systems
6	J_223	Renewable Energy Sources
7	J_224	Energy Storage Systems
8	J_238	Industrial Electricals Systems
9	J_249	Electrical Engineering Materials
10	J_250	Neural Networks & Fuzzy Logic
11	J_351	Basic Mechanical Engineering
12	J_352	Applied Mechanics
13	J_353	Material Science
14	J_354	Basics of Thermodynamics
15	J_355	Strength of Materials
16	J_356	Modeling and Simulation of manufacturing systems
17	J_357	Mechatronics
18	J_358	Finite Element Analysis
19	J_359	Nano Technology
20	J_402	Signals and Systems
21	J_409	Digital System Design
22	J_410	Electromagnetic Waves and Transmission Lines
23	J_414	IC Applications
24	J_415	Digital Signal Processing
25	J_418	Bio Medical Electronics
26	J_419	Computer Organization
27	J_422	Linear Control Systems
28	J_424	Microprocessors and Microcontrollers

29	J_434	Image and Video Processing
30	J_437	Embedded Systems
31	J_447	Wireless Sensor Networks
32	J_454	Microprocessors and Interfacing
33	J_456	Digital Image Processing
34	J_518	Database Management Systems
35	J_528	Computer Networks
36	J_529	Machine Learning
37	J_538	Data Mining
38	J_539	Cryptography & Network Security
39	J_547	Cloud Computing
40	J_551	Internet of Things (loT)
41	J_552	Human Computer Interaction
42	J_553	Soft Computing
43	J_555	Data Science & Big Data Analytics
44	J_556	Natural Language Processing
45	J_559	Semantic Web & Social Networks
46	J_560	E-Commerce
47	J_E01	Management Science
48	J_E02	Managerial Economics and Financial Analysis
49	J_E03	Total Quality Management
50	J_E04	Global Marketing
51	J_E05	Green Marketing
52	J_E06	Intellectual Property Rights
53	J_E07	Supply Chain Management
54	J_E08	Statistical Quality Control
55	J_E09	Financial Statement Analysis and Reporting
56	J_E10	Micro Small Medium Enterprises Management
57	J_E11	Entrepreneurship Development
58	J_E12	Organizational Behaviour
59	J_E13	Industrial Management
60	J_E14	Production and Operations Management
61	J_E15	Economic Policies of India

Note : '_' represents the applicable semester code

Note : The syllabus of Open Elective subjects is kept available in the Departments and website

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(UGC-AUTONOMOUS)

(J1001)MATHEMATICS - I

B.Tech. I Year I Sem: Common toAllBranches **L T P C**

3 1 0 4

Objectives: *To learn*

- *Types of matrices and theirproperties.*
- *Concept of a rank of the matrix and applying this concept to know the consistency and solving the system of linearequations.*
- *Conceptofeigenvaluesandeigenvectorsandtoreducethequadraticform to canonicalform.*
- *Concept ofSequence.*
- *Concept of nature of theseries.*
- *Geometrical approach to the mean value theorems and their application to the mathematicalproblems.*
- *Evaluationofsurfaceareasandvolumesofrevolutionsofcurves.*
- *Evaluation of improper integrals using Beta and Gammafunctions.*
- *Partial differentiation, concept of totalderivative.*
- *Findingmaximaandminimaoffunctionoftwoandthreevariables.*

UNIT-I:Matrices

Matrices: Types of Matrices, Symmetric; Hermitian; Skew-symmetric; Skew-Hermitian; orthogonal matrices; Unitary Matrices; rank of a matrix by Echelon form and Normal form, Inverse of Non-singular matrices by Gauss-Jordanmethod; System of linear equations;solving system of Homogeneous and Non-Homogeneous equations. Gauss elimination method; Gauss Seidel IterationMethod.

UNIT-II: Eigen values and Eigen vectors

Linear Transformation and Orthogonal Transformation: Eigen values and Eigenvectorsandtheirproperties:Diagonalizationofamatrix;Cayley-Hamilton Theorem (without proof); finding inverse and power of a matrix by Cayley-Hamilton Theorem; Quadratic forms and Nature of the Quadratic Forms; ReductionofQuadraticformtocanonicalformsbyOrthogonalTransformation.

UNIT-III: Sequences & Series

Sequence: Definition of a Sequence, limit; Convergent, Divergent and Oscillatory sequences.

Series: Convergent, Divergent and Oscillatory Series; Series of positive terms; Comparisontest,p-test,D-Alembert'sratiotest;Raabe'stest;Cauchy'sIntegral.

Test; Cauchy's root test; logarithmic test. Alternating series: Leibnitz test; Alternating Convergent series: Absolute and Conditionally Convergence.

UNIT-IV: Calculus

Mean value theorems: Rolle's theorem, Lagrange's Mean value theorem with their Geometrical Interpretation and applications, Cauchy's Mean value Theorem. Taylor's Series. Applications of definite integrals to evaluate surface areas and volumes of revolutions of curves (Only in Cartesian coordinates), Definition of Improper Integral: Beta and Gamma functions and their applications.

UNIT-V: Multivariable calculus (Partial Differentiation and applications)

Definitions of Limit and continuity.

Partial Differentiation; Euler's Theorem; Total derivative; Jacobian; Functional dependence&independence,Maximaandminimaoffunctionsoftwovariables and three variables using method of Lagrangemultipliers.

Course outcomes :

After learning the contents of this paper the student must be able to

- *Write the matrix representation of a set of linear equations and to analyse the solution of the system ofequations.*
- *Find the Eigen values and Eigenvectors.*
- *Reduce the quadratic form to canonical form using orthogonal transformations.*
- *Analyse the nature of sequence andseries.*
- *Solve the applications on the mean valuetheorems.*
- *Evaluate the improper integrals using Beta and Gammafunctions.*
- *Find the extreme values of functions of two variables with/ without constraints.*
  Overall student can extend skills in solving problems in Matrices, Eigen values and Eigen vectors, Sequences & Series

Text Books :

- *B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition,2010.*
- *Erwinkreyszig,AdvancedEngineeringMathematics,9th Edition,JohnWiley &Sons,2006.*
- *G.B. Thomas and R.L. Finney, Calculus and Analytic geometry, 9th Edition,Pearson, Reprint,2002.*

References :

- *N.P. Bali and Manish Goyal, A text book of Engineering Mathematics, LaxmiPublications, Reprint,2008.*
- *Ramana B.V., Higher Engineering Mathematics, Tata McGraw Hill New Delhi,11th Reprint,2010.*

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

ENGINEERING PHYSICS

B.Tech I Year I Sem: (CE,CSE&ME) (J1007) **L T P C**
B.Tech I Year II Sem: (EEE,ECE)(J2007) **3 1 04**

Objectives :

1. *Enable the student to connect the historical development of quantum mechanics and learn the basic principles of quantum mechanics and employs the Bloch's theorem to draw the band structure of solids on the basis of Kronig Pennymodel.*
2. *The students learn basic theory of semiconductors and principles and operations of optoelectronicdevices.*
3. *The Students to understand the basic properties of light, Concepts of LASER and it's engineeringapplications.*
4. *Enable the students to learn the basic principles of dielectrics, magnetic superconductors and their engineering applications and also learn the preparation, dimensional characteristics of nano materials along with their engineeringapplications.*
5. *Enable the students to learn about the types of oscillation, mechanics, whichhelpsinanalyzingandsolvingtheengineeringproblems.*

UNIT-I: Quantum Mechanics
Introduction to quantum mechanics, *Wave nature of the particle, de-Broglie's hypothesis, Davisson and Germer's experiment, GP Thompson experiment, Heisen berg's uncertainty principle, Schrodinger time independent wave equation, Particle in one dimensional box.*

BandtheoryofSolids:*Electroninperiodicpotential–Blochtheorem*,*Kronig–Penny Model, Brillion zone concept, Effective mass of an electron, Origin of energy band formation-Classification ofmaterials.*

UNIT-II: Semiconductor Physics:
Introduction to intrinsic and extrinsic semiconductors, Carrier concentration in conduction band and valancy band of intrinsic and extrinsic semiconductor, Fermi level, Effect of carrier concentration and temperature on Fermi level, Hall Effect- Applications of semiconductors.
Semiconductor Optoelectronics*: Radative and Non-radative recombination mechanisms in semiconductors, Formation of PN junction diode-V-I characteristics, Zener diode - characteristics, Solar cell and LED- Construction and working mechanism.*

UNIT-III: Optics

Huygens' principle, Superposition of waves and interference of light by wave front splitting and amplitude splitting; Young's double slit experiment, Newton's rings, Michelson interferometer, Farunhofer diffraction from a single slit, Diffraction grating and resolving power.

LASERS

Introduction-characteristics of lasers, absorption, spontaneous emission, stimulated emission, Einstein's theory of matter radiation interaction and A and B coefficients; amplification of light by population inversion, Ruby laser, He-Ne laser, Semiconductor diode laser, applications of lasers in science, Engineering andMedicine.

UNIT-IV: Dielectric Materials

Introduction-Types of Polarizations, derivation for electronic and ionic polarizabilities, internal fields in solids, Clausius Mossotti equation, Ferro electricity, structure of $BaTiO_{3,}$ piezo-electricity.

Magnetic Materials

Introduction-origin of magnetic moment, Bohr Magneton, classification of Dia, Para and Ferro magnetic materials, Hysteresis curve, Soft and hard magnetic materials; Superconductivity- properties, BCS theory, Type –I &II Superconductors-Applications.

UNIT-V: Oscillations, waves

Simple harmonic motion, Damped and forced simple harmonic oscillator, damped harmonic oscillator – heavy, critical and light damping quality factor, forced mechanical oscillators, mechanical impedance, steady state motion of forced damped harmonic oscillator.

Mechanics

Motionofarigidbodyintheplane;Rotationintheplane;Kinematicsinacoordinate systemrotatingandtranslatingintheplane;Angularmomentumaboutapointofa rigidbodyinplanarmotion;Euler'slawsofmotion,theirindependencefromNewton's laws, and their necessity in describing rigid bodymotion.

Outcomes :

1. *The student learns about solving engineering solutions employing the quantum mechanicalconcepts.*
2. *The students learns about the physics of semiconductor materials and along with their applications in science andengineering.*
3. *The student learns about the construction, working and applications of LASER inengineering.*
4. *The students get exposure to dielectric and magnetic materials and their engineeringapplications.*
5. *The students learn about theory of waves and oscillation and mechanics of rigid bodies for engineeringapplications.*

Text Books :

1. *Introduction to Quantum Physics-Eisberg andResnick.*
2. *J. Singh, Semiconductor Optoelectronics: Physics and Technology, McGraw-HillInc.*
3. *H.J. Pain, The Physics of vibrations andwaves.*
4. *Quantum Mechanics-Decker.*
5. *Ian G. Main, Oscillations and waves inphysics.*

REFERENCE :

1. *Engineering Physics, P.K Palanisamy, ScitechPublications.*
2. *Applied Physics- Dr. N Chandra Shaker and P. AppalNaidu.*
3. *Applied Physics for Engineers- P. Madhusudana rao, AcademicPublishing Company.*
4. *Engineering Physics, V. Rajandran, Tata mc. Graw Hill BookPublishers.*
5. *Introduction to Mechanics — MKVerma.*

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

ENGINEERING CHEMISTRY

B.Tech I year I sem.: CSE &ME(J1008) **L T P C**
B.Tech I year II sem.: EEE,ECE&CE(J2008) **3 1 0 4**

Course Objectives :

- *To achieve the knowledge about various kinds of Orbitals &Splitting patterns.*
- *Toknowaboutthewaterqualityanditsparameters,learningtheknowledge in the assessment of water quality andpurification.*
- *To achieve the knowledge about various kinds of Electrochemical cells and batteries and corrosionphenomenon.*
- *To understand the reactions, mechanism and stereochemistry of organic molecules.*
- *Understandtheprinciple,instrumentationandapplicationsofSpectroscopic techniques.*

Unit-1: Molecular structure and Theories of Bonding: (9)
Atomic and Molecular orbitals. Linear Combination of Atomic Orbitals (LCAO), molecularorbitalsofdiatomicmolecules,molecularorbitalenergyleveldiagrams ofN_2,O_2andF_2molecules.ðmolecularorbitalsofbutadieneandbenzene.

Crystal Field Theory (CFT): Salient Features of CFT – Crystal Field Splitting of transition metalion d- orbitals in Tetrahedral, Octahedral and square planar geometries. Band structure of solids and effect of doping on conductance.

Unit-2: Water and its treatment: (9)
Introduction – hardness of water – Causes of hardness - Types of hardness: temporary and permanent – expression and units of hardness – Estimation of hardness of water by complexometric method. Potable water and its specifications. Steps involved in treatment of water – Disinfection of water by chlorination and ozonization. Boiler feed water and its treatment – Calgon conditioning, Phosphate conditioning and Colloidal conditioning. External treatment of water – Ion exchange process. Desalination of water – Reverse osmosis. Numerical problems.

Unit-3: Electrochemistry and corrosion: (9)
Electrochemicalcells–electrodepotential,standardelectrodepotential,types of electrodes – calomel, Quinhydrone and glass electrode. Nernst equation Determination of pH of a solution by using quinhydrone and glass electrode. Electrochemicalseriesanditsapplications.Numericalproblems.Potentiometric

titrations. Batteries – Primary (Lithium cell) and secondary batteries (Lead – acid storage battery and Lithium ion battery).

Causes and effects of corrosion – theories of chemical and electrochemical corrosion – mechanism of electrochemical corrosion, Types of corrosion: Galvanic, water-line and pitting corrosion. Factors affecting rate of corrosion, Corrosion control methods- Cathodic protection – Sacrificial anode and impressed current cathodic methods. Surface coatings – metallic coatings – methods of application. Electroless plating of Nickel.

Unit-4: Stereochemistry, Reaction Mechanism and synthesis of drug molecules: (9)

Introduction to representation of 3-dimensional structures, Structural and stereoisomers, configurations, symmetry and chirality.Enantiomers, diastereomers, optical activity and Absolute configuration. Conformation alanalysis of n- butane.

Substitution reactions: Nucleophilic substitution reactions: Mechanism of S_N1, S_N2 reactions. Electrophilic and nucleophilic addition reactions: Addition of HBr to propene. Markownikoff and anti Markownikoff's additions. Grignard additionsoncarbonylcompounds.Eliminationreactions:Dehydrohalogenation of alkylhalides. Saytzeff rule. Oxidation reactions: Oxidation of alcohols using $KMnO_4$ and chromicacid.

Reduction reactions: reduction of carbonyl compounds using $LiAlH_4$& $NaBH_4$. Hydroboration of olefins. Structure, synthesis and pharmaceutical applications of Paracetamol and Aspirin.

Unit-5: Spectroscopic techniques and applications: (9)

Principles of spectroscopy, selection rules and applications of electronic spectroscopy.vibrationalandrotationalspectroscopy.BasicconceptsofNuclear magnetic resonance Spectroscopy, chemical shift. Introduction to Magnetic resonanceimaging.

Course Outcomes :

- *Students will gain the basic knowledge of atomic and molecular orbitals & Splittingpatterns.*
- *Theycanunderstandthebasicpropertiesofwateranditsusageindomestic and industrialpurposes.*
- *To gain the knowledge about the Electrochemical cells, batteries and corrosionphenomenon.*
- *They learn about organic reactions and the stereochemistry of organic molecules.*
- *Theycanpredictpotentialapplicationsofspectroscopyandpracticalutility in order to become good engineers and improve the employability*

Text books :

- *Text Book of Engineering Chemistry by A.Jayashree, Wiley publications, NewDelhi.*
- *Engineering Chemistry by P.C. Jain and M. Jain, Dhanpatrai Publishing Company, New Delhi(2010).*
- *Text Book of Engineering Chemistry by ShashiChawla.*
- *Engineering Chemistry by Rama Devi, Venkata Ramana Reddy and Rath,Cengage learning, New Delhi.(2016).*
- *Text Book of Engineering Chemistry by C. Parameshwara Murthy. B.S. Publications.*
- *Text Book of Engineering Chemistry by Y. Bharathi kumari and Jyotsna Cherikuri, VGSPublications.*

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(UGC-AUTONOMOUS)

(J1302) ENGINEERING GRAPHICS

B.TECH. I YEAR – I SEM: CSE&EEE **L T P C1**
0 43

Pre-requisites: Nil

Course objectives:

1. *ToUsevariousengineeringdrawinginstrumentsalongwithlearnthebasics of drawings, dimensioning, scales and conic sections like ellipse,parabola andhyperbola.*
2. *ToLearnprojectionsofpoints,linesandplaneviewedindifferentpositions.*
3. *To Learn projections of solids and sections of solids in differentpositions.*
4. *To impart knowledge of development of surfaces and intersections is most useful of real time applications inindustry.*
5. *Attain the concept of isometric, orthographicprojections.*

UNIT – I

Introduction to Engineering Drawing: *Principles of Engineering Graphics and their Significance, Conic Sections including the Rectangular Hyperbola – General method only. Cycloid, Epicycloid and Hypocycloid, Scales – Plain & Diagonal.*

UNIT- II

Orthographic Projections: *Principles of Orthographic Projections – Conventions – Projections of Points and Lines, Projections of Plane regular geometric figures.—Auxiliary Planes.*

UNIT – III

Projections of Regular Solids – Auxiliary Views - Sections or Sectional views of Right Regular Solids – Prism, Cylinder, Pyramid, Cone – Auxiliary views – Sections ofSphere.

UNIT – IV

Development of Surfaces of Right Regular Solids – Prism, Cylinder, Pyramid and Cone, Intersection of Solids: Intersection of – Prism vs Prism- Cylinder Vs Cylinder.

UNIT –V

Isometric Projections: *Principles of Isometric Projection – Isometric Scale – IsometricViews–Conventions–IsometricViewsofLines,PlaneFigures,Simple and Compound Solids – Isometric Projection of objects having non- isometric lines.IsometricProjectionof SphericalParts.Conversionof IsometricViewsto Orthographic Views and Vice-versa–Conventions.*

IntroductiontoCAD:(ForInternalEvaluationWeightageonly):*Introduction to CAD Software Package Commands.- Free Hand Sketches of 2D- Creation of 2D Sketches by CADPackage.*

TEXTBOOKS :

1. *Engineering Drawing N.D. Bhatt /Charotar.*
2. *Engineering Drawing / N. S. Parthasarathy and Vela Murali/Oxford.*

REFERENCE BOOKS :

1. *Engineering Drawing / Basant Agrawal and McAgrawal/ McGrawHill.*
2. *Engineering Drawing/ M. B. Shah, B.C. Rane /Pearson.*
3. *Computer Aided Engineering Drawing – K Balaveera Reddy et al – CBS Publishers.*

Course Outcomes :

1. *Select, construct and interpret appropriate drawing scales as per the situation and able to draw simplecurves.*
2. *Graduates are able to draw orthographic projections of points ,lines and planes.*
3. *Able to draw the orthographic projections of solids and sections ofsolids.*
4. *Layout development of solids for practical situations along with able to draw sections ofsolids.*
5. *Comprehend the isometricprojections and improves the employability in several engineering field.*

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J1501) PROGRAMMING FOR PROBLEM SOLVING

Common To

B.Tech. I Year I Sem: CSE,ECE,EEE	**L T P C**
B.Tech. I Year II Sem: ME,CIVIL	**3 1 0 4**

Course Objectives :

1. *To introduces the basics of computers and informationtechnology.*
2. *To educate problem solvingtechniques.*
3. *To impart programming skills in Clanguage.*
4. *To practice structured programming to solve real lifeproblems.*
5. *To study the concepts of Assembler, Macro Processor, Loader andLinker.*

Syllabus :

UNIT-I

History and Classifications of Computers – Components of a Computer – Working Principle of Computer – Hardware – Software and its Types – Applications of Computers –Network and its Types – Internet and its services – Intranet– Extranet – Generations of Programming Languages Introduction to NumberSystem.

UNIT-II

Problem solving techniques – Program development life-cycle – Algorithm – Complexities of Algorithm – Flowchart – Pseudo code. Introduction to C –C Program Structure – C tokens: Keyword, Identifiers, Constants, Variable, Data types (simple and user-defined) – Operators and its types – Operator Precedence – Expression Evaluation – Type Conversion – Input/outputoperations.

UNIT-III

Branching Statements – Looping Statements – Arrays – Multidimensional arrays. Functions: Function Prototype, Passing Arguments to Function – Call by Value and Call by Reference – Nested function call – Library Functions – User-defined Functions – Recursion. Strings – String I/O functions, String Library functions – Storage classes.

UNIT-IV

Structures–ArraysandStructures–Nestedstructures–StructureasArgument tofunctions–UnionPointers–Declaration,InitializationandAccessingPointer variable – Pointers and arrays – pointers as argument and return value – Pointers and strings - pointers andstructures.

UNIT-V

Introduction to File Concepts in C – File types – I/O operations on files – File modes–Randomaccesstofiles–Commandlinearguments.DynamicMemory Allocation: MALLOC, CALLOC, FREE, REALLOC Introduction topreprocessor – Macro substitution directives – File inclusion directives –Compiler Control directives – Miscellaneous directives.

Text Books :

1. *J.B.Dixit,"ComputerFundamentalsandProgramminginC",FirewallMedia, 2009.*
2. *Balagurusamy.E,"ProgramminginANSIC",TataMcGrawHill,Sixthedition, 2012.*

Reference Books :

1. *AshokNKamthane,"ComputerProgramming",Pearsoneducation,Second Impression,2008.*
2. *Venugopal.K and Kavichithra.C, "Computer Programming", New Age International Publishers, First Edition,2007.*
3. *Byron S Gottfried, "Programming with C", Schaum's Outlines, Second Edition, Tata McGraw-Hill,2006.*
4. *Dromey R.G., "How to Solve it by Computer", Pearson Education, Fourth Reprint,2007.*
5. *Kernighan,B.W and Ritchie,D.M, "The C Programming language", Second Edition, Pearson Education,2006.*

Course Outcomes :

1. *Know the fundamentals ofcomputers.*
2. *Uunderstand applying logical skills for problemsolving.*
3. *Learn C programming languageconcepts.*
4. *Apply C programming language concepts for problemsolving.*
5. *Gain knowledge in using memory management techniques in c programming and improves the programming skills and provide employability.*

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J1502) PROGRAMMING FOR PROBLEMSOLVING LABORATORY

Common To

B.Tech. I Year I Sem: CSE,ECE,EEE	**L T P C**
B.Tech. I Year II Sem:ME,CIVIL	**0 0 3 1.5**

Course Objectives :

1. *To study and understand the use of OScommands.*
2. *To expose the undergraduate students to the practical implementation of C Programmingconcepts.*
3. *To improve students capability in applying C Programming for problem solving.*
4. *To make students use effective memory management techniques in programming.*
5. *To expose students to modular programming concepts in problemsolving.*

LIST OF EXPERIMENTS :

Week 1 : *Study of OS commands*

Week 2 : *Study of Compilation and execution of simple C programs.*

Week 3 : *Basic C Programs.*

a. *ArithmeticOperations.*
b. *Area and Circumference of acircle.*
c. *Swapping with and without TemporaryVariables.*

Week 4 : *Programs using Branching statements.*

a. *To check the number as Odd orEven.*
b. *Greatest of ThreeNumbers.*
c. *CountingVowels.*
d. *Grading based on Student'sMark.*

Week 5 : *Programs using Control Structures.*

a. *Computing Factorial of anumber.*
b. *Fibonacci Seriesgeneration.*
c. *Prime NumberChecking.*
d. *Computing Sum ofDigit.*

Week 6 : *Programs using String Operations.*

a. PalindromeChecking.

b. Searching and Sorting Names.

Week 7 : *Programs using Arrays*

Week 8 : *Programs usingFunctions.*

a. ComputingnCr.

b. Factorial usingRecursion.

c. Call by Value and Call byReference

Week 9: *Programs using Structure.*

a. Student InformationSystem.

b. Employee Pay SlipGeneration.

c. Electricity BillGeneration

Week 10: *Programs using Pointers.*

a. Pointer andArray.

b. Pointer tofunction.

c. Pointer toStructure

Week 11: *Programs using File Operation.*

a. Counting No. of Lines, Characters and BlackSpaces.

b. Content copy from one file toanother.

c. Reading and Writing Data inFile

Text Books :

1. *J.B.Dixit,"ComputerFundamentalsandProgramminginC",FirewallMedia, 2009.*
2. *Balagurusamy.E,"ProgramminginANSIC",TataMcGrawHill,Sixthedition, 2012.*

Course Outcomes :

1. *Learn practical implementation of C programming languageconcepts.*
2. *Debug and document programs inC.*
3. *Know usage of logical skills in developing Cprograms.*
4. *Apply effective memory management techniques for problemsolving.*
5. *Understand the file managementtechniques.*

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(UGC-AUTONOMOUS)

ENGINEERING PHYSICS AND CHEMISTRY LAB

B.Tech I Year I Sem: (ME, CE &CSE) (J1009) **L T P C**

B.Tech I Year II Sem: (EEE,ECE)(J2009) **0 0 3 1.5**

OBJECTIVES :

This course on Physical Sciences lab has been designed with 18 experiments in Physics and Chemistry. The objective of the course is that the student will have exposure to various experimental skills which is very essential for an engineering student. The experiments are selected from various areas of physics and chemistry like Physical Optics, Lasers, Fiber optics, waves and oscillations, semiconductors, Electricity, Conductometry, Potentiometry, etc... Thestudentisalsoexposedtovarioustoolslike Screw Gauge, Verniercallipers, Physical balance, Spectrometer, Microscope, Viscometer, and stalagmometer, etc.

PHYSICS LAB (CYCLE-1)

(Any Six Experiments compulsory)

- *Determination of Eenergy gap of semiconductor material of p-n junction diode.*
- *Determination of frequency of electrical vibrator by using Melde's experiment.*
- *Determination of wavelength of LASER byusing diffraction grating.*
- *Determinationofrigiditymodulusofagivenwireusing Torsionalpendulum.*
- *R-C circuitanalysis.*
- *Determination of Numerical aperture of a given opticalfiber.*
- *Determination of the radious of curvature of plano-convex lens by forming Newton'srings.*
- *LED-characteristics.*

CYCLE-2CHEMISTRY LAB

- *Determination of total hardness of water by complexometric method using EDTA.*
- *Estimation of an HCl by Conductometrictitrations.*
- *Estimation of Acetic acid by Conductometrictitrations.*
- *Estimation of HCl by Potentiometrictitrations.*
- *Determinationofrateconstantofacidcatalysedhydrolysisofmethylacetate*

- *Thin layer chromatography calculation of R_f values. egortho and para nitro phenols.*
- *Verification of freundlich adsorption isotherm-adsorption of acetic acid on charcoal.*
- *Determinationofviscosityofcastoroilandgroundnutoilbyusing Ostwald's viscometer.*
- *Determinationofsurfacetensionofagiveliquidusingstalagmometer.*

Laboratory Manuals :

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

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J2002) MATHEMATICS-II - ODE's and Multivariable Calculus

B.Tech. I YearIISemester **L T P C3**
1 04

Objectives :
To learn

- *Methodsofsolvingthedifferentialequationsoffirstandhigherorder.*
- *Evaluation of multiple integrals and theirapplications.*
- *Thephysicalquantitiesinvolvedinengineeringfieldrelatedtovectorvalued functions. The basic properties of vector valued functions and their applications to line, surface and volume integrals.*

UNIT-I: First Order ODE
Exact, linear and Bernoulli's equations; Applications : Newton's law of cooling, Law of natural growth and decay; Equations not of first degree: equations solvable for p, equations solvable for y, equations solvable for x and Clairaut's type.

UNIT-II: Ordinary Differential Equations of Higher Order
Second order linear differential equations with constant coefficients: Non-Homogeneous terms of the type e^{ax}, sinax, cosax polynomials in x^m, $e^{ax}v(x)$ xv(x) and; method of variation of parameters; Equations reducible to linear ODE with constant coefficients: Legendre's equation, Cauchy-Euler equation.

UNIT-III: Multivariable Calculus (Integration)
Evaluation of Double Integrals (Cartesian and polar coordinates); change of orderofintegration(onlyCartesianform);EvaluationofTripleIntegrals:Change of variables (Cartesian to polar) for double and (Cartesian to Spherical and Cylindrical polar coordinates) for tripleintegrals.

Applications: Areas (by double integrals) and volumes (by double integrals and tripleintegrals).

UNIT-IV: Vector Differentiation
Vector point functions and scalar point functions. Gradient, Divergence and Curl. Directional derivatives, Tangent plane and normal line. Vector Identities. Scalar potential functions. Solenoidal and Irrotational vectors.

UNIT-V: Vector Integration
Line, Surface and Volume Integrals. Theorems of Green, Gauss and Stokes (without proofs) and their applications.

Course outcomes :

After learning the contents of this paper the student must be able to

- *Identifywhetherthegivendifferentialequationoffirstorderisexactornot.*
- *Solve higher differential equation and apply the concept of differential equation to real worldproblems.*
- *Evaluate the multiple integrals and apply the concept to find areas and volumes, Evaluate the line, surface and volume integrals and converting them from one toanother.And improves skill in problem solving for various mathematical applications*

Text Books :

- *B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36thEdition,2010.*
- *Erwinkreyszig,AdvancedEngineeringMathematics,9thEdition,JohnWiley &Sons,2006G.B.ThomasandR.L.Finney,CalculusandAnalyticgeometry, 9thEdition,Pearson, Reprint,2002.*

References :

- *Paras Ram, Engineering Mathematics, 2ndEdition, CBSPublishes.*
- *S. L. Ross, Differential Equations, 3rdEd., Wiley India,1984.*

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J2202) BASIC ELECTRICAL &ELECTRONICS ENGINEERING

B.Tech I Year IISEM:CSE,MECH,CIVIL **L T P C2 1 03**

Course Objective :

1. *To understand the concepts of Basis Electrical Engineering parameters, quantities, and networktheorems.*
2. *To analyze the steady state analysis of AC and DCcircuits.*
3. *To Study the construction operation and analysis of transformers, DC and ACmachines.*
4. *To Study the Operational Characteristics of Diodes and RectifierCircuits.*
5. *To Study the Operational Characteristics of transistor, characteristics and itsapplications.*

UNIT- I

Electrical Circuits: *Circuits concept, R-L-C Parameters, Voltage and Current sources, Source Transformation, V–I relationship for Passive elements, Kirchoff'sLaws,Networkreductiontechniques–series,parallel,seriesparallel, star/delta transformations, Nodal Analysis, Mesh analysis with DCexcitations.*

Network Theorems - *Thevenin's, Norton's, Maximum Power Transfer, Superposition, Reciprocity Theorems with DC excitation.*

UNIT- II

Single Phase AC Circuits - *R.M.S. and Average values, Form Factor, steady state analysis of series, Parallel and Series parallel Combinations of R, L and C with Sinusoidal excitation, concept of reactance, Impedance, Susceptance and Admittance – phase and phase difference, Concept of Power Factor, j-notation, complex and Polar forms of representation.*

UNIT- III

D.C.Machines*:Constructionalfeatures,MethodsofExcitation,E.M.F.Equation and Applications, Torque development in D.C motor, Characteristics of DC motors,losses,Efficiency,Swinburne'stest,SpeedcontrolofDCShuntmotors*
Single Phase Transformers*: Construction and principle of operation, Development of No Load & On Load Phasor diagrams (Basic fundamentals only).*

3-Phase Induction Motor*: Constructional features, Principle of Operation (Basic fundamentals only).*

UNIT- IV

P-N Junction Diode – *Qualitative theory of P-N Junction, P-N Junction diode, V-Icharacteristic(ForwardandReverse),Temperaturedependence,Idealversus practical, Static and dynamicresistances.*

Rectifiers and Filters - *The P-N junction as a rectifier - A Half Wave Rectifier, Ripple Factor, Full Wave Rectifier, Bridge Rectifier, Filters-Inductive and Capacitive with qualitative analysis.*

UNIT- V

Bipolar Junction Transistor (BJT) - *Construction, Principle of Operation, CB, CE and CCconfigurations.*

Junction Field Effect Transistor - *Construction, Principle of Operation, V-I Characteristic, Comparison of BJT and FET.*

Zener Diode and SCR Devices- *Zener diode characteristics, Use of Zener diode as simple regulator, Breakdown Mechanisms in Zener diode, Principle of Operation of SCR.(Basic fundamentalsonly).*

TEXT BOOKS :

1. *ElectronicDevicesandCircuits–R.L.BoylstonandLouisNashelsky,PEI/PHI,9th Ed,2006.*
2. *Engineering circuit analysis- by William Hayt and Jack E. Kemmerly, Mc Graw Hill Company, 6th edition.*
3. *Electrical Machines – byP.S.Bimbra.*

REFERENCES :

1. *IntroductiontoElectronicDevicesandCircuits-RoberT.Paynter,PearsonEducation.*
2. *Electronic Devices and Circuits -- K. Lal Kishore, B.S. Publications, 2nd Edition,2005.*
3. *Electrical Machines – byJ.B.Gupta.*
4. *Network Theory by N.C.Jagan & C.Lakshminarayana, B.S.Publications.*
5. *Network Theory by Sudhakar, Shyam Mohan Palli,TMH.*

Course outcomes :

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

1. *Basic Electrical Circuits andParameters.*
2. *The operational characteristics of A.C circuits andparameters.*
3. *Operation of the transformers in the energy conversion process, electromechanical. Energy conversion, construction operation characteristics of DCmachines.*
4. *The constructional features and also fundamental and characteristics of diode and RectifierCircuit.*
5. *The constructional features and also fundamental and characteristics of transistor.Withwhichhe/shecanabletoapplytheaboveconceptualthings toreal-worldelectricalandelectronicsproblemsandapplications. And improves employability skills*

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J1011) (J2011) ENGLISH

B.Tech. I Year I Sem: EEE&ECE	**L T P C**
B.Tech. I Year II Sem: ME, CE&CSE	**2 0 0 2**

Introduction :

In view of the growing importance of English as a tool for global communication and the consequent emphasis on training students to acquire language skills, the syllabus of English has been designed to develop linguistic, communicative and critical thinking competencies of Engineering students.

In English classes, the focus should be on the skills development in the areas of vocabulary, grammar, reading and writing. For this, the teachers should use the prescribed text for detailed study. The students should be encouraged to read the texts leading to reading comprehension and different passages may be given for practice in the class. The time should be utilized for working out the exercises given after each excerpt, and also for supplementing the exercises with authentic materials of a similar kind, for example, newspaper articles, advertisements, promotional material etc. The focus in this syllabus is on skill development, fostering ideas and practice of language skills in various contexts and cultures.

Learning Objectives: *The course will help to*

a. *Improve the language proficiency of students in English with an emphasis on Vocabulary, Grammar, Reading and Writing skills.*
b. *Equip students to study academic subjects more effectively and critically using the theoretical and practical components of English syllabus.*
c. *Develop study skills and communication skills in formal and informal situations.*

Course Outcomes : *Students should be able to*

- *Use English Language effectively in spoken and written forms.*
- *Comprehend the given texts and respond appropriately.*
- *Communicate confidently in various contexts and different cultures.*
- *Acquire basic proficiency in English including reading and listening comprehension, writing and speaking skills.*

SYLLABUS

UNIT –I

'The Raman Effect' from the prescribed textbook 'English for Engineers' published by Cambridge University Press.

Vocabulary Building: *The Concept of Word Formation —The Use of Prefixes and Suffixes.*

Grammar: *Identifying Common Errors in Writing with Reference to Articles and Prepositions.*

Reading: *Reading and Its Importance- Techniques for Effective Reading.*

Basic Writing Skills: *Sentence Structures - Use of Phrases and Clauses in Sentences-Importance of Proper Punctuation- Techniques for writing precisely.* –**Paragraphwriting**–*Types,StructuresandFeaturesofaParagraph-Creating Coherence-Organizing Principles of Paragraphs inDocuments.*

UNIT –II

'Ancient Architecture in India' from the prescribed textbook 'English for Engineers' published by Cambridge University Press.

Vocabulary: *Synonyms and Antonyms.*

Grammar: *Identifying Common Errors in Writing with Reference to Noun-pronoun Agreement and Subject-verb Agreement.*

Reading: *Improving Comprehension Skills – Techniques for Good Comprehension.*

Writing: *Format of a Formal Letter*-**Writing Formal Letters** *E.g.., Letter of Complaint, Letter of Requisition, Job Application with Resume.*

UNIT –III

'Blue Jeans' from the prescribed textbook 'English for Engineers'published by Cambridge University Press.

Vocabulary*:AcquaintancewithPrefixesandSuffixesfromForeignLanguages in English to form Derivatives-Words from Foreign Languages and their Use in English.*

Grammar: *Identifying Common Errors in Writing with Reference to Misplaced Modifiers and Tenses.*

Reading: *Sub-skills of Reading- Skimming and Scanning.*

Writing*: Nature and Style of Sensible Writing-* **Defining- Describing** *Objects, Places and Events* – **Classifying***- Providing Examples or Evidence.*

UNIT –IV

'What Should You Be Eating' from the prescribed textbook 'English for Engineers' published by Cambridge University Press.

Vocabulary*: Standard Abbreviations in English.*

Grammar: *Redundancies and Clichés in Oral and Written Communication.*

Reading*: Comprehension***-** *Intensive Reading and Extensive Reading.*

Writing: Writing Practices-*-Writing Introduction and Conclusion - Essay Writing-Précis Writing.*

UNIT –V

'HowaChineseBillionaireBuiltHerFortune'fromtheprescribedtextbook 'English for Engineers' published by Cambridge University Press.
Vocabulary: *Technical Vocabulary and theirusage.*

Grammar : *Common Errors in English.*

Reading : *Reading Comprehension-Exercises for Practice.*

Writing: Technical Reports- *Introduction – Characteristics of a Report – Categories of Report Formats- Structure of Reports (Manuscript Format) - Types of Reports - Writing a Report.*

Prescribed Textbook :

1 *Sudarshana,N.P.andSavitha,C.(2018).EnglishforEngineers.Cambridge UniversityPress.*

References :

1. *Swan, M. (2016). Practical English Usage. Oxford UniversityPress.*
2. *Kumar, S and Lata, P.(2018). Communication Skills. Oxford University Press.*
3. *Wood, F.T. (2007).Remedial English Grammar.Macmillan.*
4. *Zinsser, William. (2001). On Writing Well. Harper ResourceBook.*
5. *Hamp-Lyons, L. (2006).Study Writing. Cambridge University Press.Exercises in Spoken English. Parts I –III. CIEFL, Hyderabad. Oxford UniversityPress.*

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J2503) OBJECT ORIENTED PROGRAMMING

Common To
B.Tech. I Year II Sem: CSE,ECE,EEE **L T P C3**
0 03

Course Objectives :

1. *To expose the students to the concepts of Object-OrientedParadigm.*
2. *To improve students capability in applying object oriented programming concepts in problemsolving.*
3. *To improve students expertise in implementing object oriented concepts using C++Programming.*
4. *To enable students to understand concepts of templates and exceptional handling.*
5. *To study the concepts of Assembler, Macro Processor, Loader andLinker*

Syllabus

UNIT- I

Principles of Object Oriented Programming: *ProcedureVs Object Oriented, Paradigm, Basic concepts, benefits, Applications and Object Oriented Languages.*

Introduction: *Program structure, Creating, Compiling and Linking of C++ program.*

Token, Expression and Control Structures: *Tokens, Keywords, Identifiers andConstants,DataTypes,Operators,Precedence,TypeCompatibility,Control Structures, New Features of C++.* **Functions:** *Function Prototype and ParameterPassing,InlineFunctions,Default,ConstantArguments,Recursion, Function Overloading, FunctionTemplate.*

UNIT - II

Classes and Objects: *Defining classes and Member functions, Arrays, Static Members, Friend Functions.* **Constructors and Destructors:** *Type of Constructors, Dynamic Initialization of Objects, Destructors.*

UNIT - III C++ operator overloading: *Fundamentals, restrictions, overloading unary / binary operators, overloading ++ and —, Manipulation of Strings.* **C++ Inheritance:***Definingderivedclasses,Types ofInheritance,VirtualBaseclass Abstract Class, Nesting ofclasses.*

UNIT- IV Pointers and Polymorphism: *Pointers and Generic pointer, Pointer to Objects and Derived Classes, this pointer, Virtual Functions, Virtual*

Destructors. **C++ Stream Input/Output:** *Streams, Stream classes, Formatted and Unformatted operations, Manipulators.* **Files:** *Classes for file Stream operations, Sequential and Random access operations, Command line Arguments.*

UNIT-V C++ Templates: *Introduction, class templates, member function template,overloadingtemplatefunctions.* **C++ExceptionHandling:** *Try,throw, catch.*

Text Books :

1. *E. Balagurusamy* **"***Object Oriented Programming with C++" , McGraw-Hill Education (India), 6th Edition2013.*
2. *BjarneStroustrup"TheC++ProgrammingLanguage",PearsonEducation, 5th Edition(2013).*
3. *Robert Lafore* **"***Object-Oriented Programming in C++ " 4th Edition Sams Publishing,2002.*

Reference Books :

1. *K.R. Venugopal, Rajkumar, T.Ravishankar, "Mastering C++", McGraw-Hill EducationIndiaPvt.Ltd,SecondEdition,ISBN:0-07-463454-2,1997.*
   2. TimothyBud,"AnIntroductiontoObjectOrientedProgramming",Pearson Education, Second Edition, ISBN 81-7808-228-4,2004.

Course Outcomes :

1. *Know the differences between procedural language and object-oriented languages.*
2. *Gain knowledge of Object-Oriented Paradigm for problemsolving.*
3. *WillbeabletogainpracticalknowledgeofOOPconceptsusingC++.*
4. *Apply reusability concepts like inheritance, polymorphism in application development.*
5. *Use generic programming concepts and modularprogramming. And improves the employability in firmware development.*

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J2504) OBJECT ORIENTEDPROGRAMMINGLAB

B.Tech. I Year II-SEM: CSE,ECE,EEE

L T P C
0 0 3 1.5

Course Objectives :

1. *To expose the students to the practical implementation of Object-Oriented concepts using C++ programminglanguage.*
2. *To improve students capability of object oriented programming forproblem solving.*
3. *This course provides in-depth coverage of object-oriented programming principles and techniques usingC++.*
4. *Topics include classes, overloading, data abstraction, information hiding, encapsulation, inheritance, polymorphism, file processing, templates, exceptions, container classes, and low-level languagefeatures.*
5. *To make students capable of using reusability and generic programming concepts in developingapplications.*

LIST OF EXPERIMENTS :

Experiment-I

1. *Read 10 numbers and displays them in sorted order.*
2. *Write functions to swap two numbers using pointers andreferences.*
3. *Writeaprogramthatprintsthesizesofthefundamentaltypes,afewpointer types and a few enumeration of your choice.Use the size of operator.*

Experiment-II

4. *Write a function that counts the number of occurrences of pair of letters in astring,forexamplethepair“ab”appearstwicein“xabaacbaxabb”.*
5. *FindLCMoftwo,threeandfournumbersusingfunctionoverloading.*
6. *Create a structure for storing students details (sno, sname, course, Array of five subject’s marks) provide the functions for printing the total marks, calculating percentage and the result. (Note: Include the functions within thestructure).*

Experiment-III

7. *Write a macro to find square (A+B)-square(C+D).*
8. *Create a class for complex number and provide methods for addition, subtraction,multiplicationanddivision.Displaytheoutputin“a+ib”form.*
9. *Create a Distance class and provide methods for addition and subtraction of twodistances.*

Experiment-IV

10. *Create a complex number class with default, parameterized, copy constructors and adestructor.*
11. *Create a class which provides a method to count the number of objects that are created for that class. (Use staticmethod).*
12. *Create a class INT that behaves exactly like an int. (Note: overload +, -,*, /, %).*

Experiment-V

13. *Create a string class and overload + to concatenate two Strings, overload () to print substring and overload <, <=, >, >=, = = operators to compare two stringobjects.*
14. *Create Date class and overload ++ to print next date and overload — to print previousdate.*

Experiment-VI

15. *Create a user defined array class Array and overload + to add two arrays, overload * to multiply two arrays, overload [] to access given position elementandalsotouseleftsideofanassignmentoperator.*
16. *Create a complex number class and overload +, -, * operators usingfriend functions.*
17. *ProgramtoperformMatrixoperationsusingoperatoroverloadingwithfriend functions.*

Experiment-VII

18. *Programs to demonstrate Single, Multiple, Multilevel, Hierarchical, Hybrid and Multipathinheritance.*
19. *Programs to demonstrate constructors ininheritance.*

Experiment-VIII

20. *CreateaShapeclasswithmethodsperimeter,area.DeriveclassesCircle, Square and Triangle from Shape class. Provide implementation for perimeter, area in the derived classes. (Declare perimeter, area as pure virtualfunctions).*
21. *Implement Multipath inheritance by declaring pointers to base class and accessthederivedclassmethodsusingbaseclasspointers.*
22. *Program to demonstrate ofmanipulators.*

Experiment-IX

23. *Writeafunctiontemplatetooverloadmaxmethod,whichcanfindmaximum of any datatype.*
24. *Createfunctiontemplatetosortanarray, whichcansortarrayofanytype.*
25. *Create a Generic calculator class to perform +, -, *, / operations on any type.*

26. Create a Generic class for array of variable size and provide sorting, searching on anytype.

Experiment-X

27. Findtherootsofaquadraticequation.Handleexceptionfordividebyzero.

28. Handle the Array Index out of Bounds Exception when accessing the elements ofArrays.

29. Createatextfileofstudentinformationanddisplaythecontentsoffile.

Experiment-XI

30. Write a program to read a text file and remove all white space characters and replace each alphanumeric character with next character in the alphabet (Replace z by a and 9 by0).

31. Copy the contents of one file into another except the blank lines using command linearguments.

32. Create a file with floating point numbers. Read pair of floating numbers from the file and write into anotherfile.

Experiment-XII

33. Readthecontentsofthreefilesconcatenatethemanddisplayit.

34. Writecomplexnumbersintoafileinbinaryformatandincharacterformat.

35. Create a class with integers and overload << to place integer into a file and overload >> to read aninteger.

Course Outcomes :

After completion of the course, the student will be ableto…

1: Gain knowledge of implementing Object-Oriented Programming concepts using C++.

2: Know the application of Object-Oriented Programming concepts for developing applications.

3: Debug and document programs in C++.

4: Develop applications using modularization technique.

5: Apply reusability and generic programming concepts in application development.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J2203) BASIC ELECTRICAL & ELECTRONICSENGINEERINGLAB

B.Tech I Year II SEM: CSE,MECH,CIVIL **L T P C0**
0 31.5

List of Experiments :

1. *Verification of Kirchhoff'sLaws.*
2. *Verification of superposition and ReciprocityTheorems.*
3. *Verification of Maximum Power transfertheorem.*
4. *Experimental Determination of Thevenin'stheorem.*
5. *Magnetization characteristics of DC ShuntGenerator.*
6. *Swinburne's Test on DC shuntmachine.*
7. *Brake test on DC shuntmotor.*
8. *OC & SC tests on single phasetransformer.*
9. *PN Junction Diode characteristics (Forward bias, Reversebias).*
10. *Zener DiodeCharacteristics.*
11. *Transistor CE Characteristics (Input andOutput).*
12. *Rectifier without filters (Full wave & Halfwave).*
13. *Rectifier with filters (Full wave & Halfwave).*

Note: Student should perform 11 experiments out of 13 experiments.
Experiments.
7 & 8 are optional.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J1012) (J2012) ENGLISH LANUAGECOMMUNICATION SKILLS LAB

B.Tech. I Year--I Sem: ECE&EEE **L T P C**

B.Tech. I Year--II Sem: ME, CE&CSE **0 0 2 1**

The Language Lab *focuses on the production and practice of sounds of language. It familiarizes the students with the use of English in everyday situations both in formal and informal contexts.*

Course Objectives :

- *To facilitate computer-assisted multi-media instruction enabling individualized and independent languagelearning.*
- *To sensitize the students to the nuances of English speech sounds, word accent, intonation andrhythm.*
- *To bring about a consistent accent and intelligibility in students' pronunciationofEnglishbyprovidinganopportunityforpracticeinspeaking*
- *To improve the fluency of students in spoken English and neutralize their mother tongueinfluence.*
- *To train students to use language appropriately for public speaking, group discussions andinterviews.*

Learning Outcomes: *Students will be able to attain*

- *BetterunderstandingofnuancesofEnglishlanguagethroughaudio-visual experience and groupactivities.*
- *Neutralization of accent forintelligibility.*
- *Speaking skills with clarity and confidence which in turn enhances their employabilityskills.*

Syllabus :

The language Lab shall have two parts :

Computer Assisted Language Learning (CALL) Lab.

Interactive Communication Skills (ICS) Lab.

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 theirpronunciation.*
- *To equip students with necessary training in listening, so that they can comprehendthespeechofpeopleofdifferentbackgroundsandregions*.

- *Studentsshouldbegivenpracticeinlisteningtothesoundsofthelanguage to be able to recognize them, to distinguish between them to mark stress and recognize and use the right intonation insentences.*
- *Listening for generalcontent.*
- *Listening to fill upinformation.*
- *Intensivelistening.*
- *Listening for specificinformation.*

<u>Speaking Skills :</u>

Objectives :

- *To make students aware of the role of speaking in English and its contribution to theirsuccess.*
- *To enable students to express themselves fluently and appropriately in social and professionalcontexts.*
- *Oralpractice.*
- *Describingobjects/situations/people.*
- *Roleplay.*
- *Just A Minute (JAM)Sessions.*

<u>Reading Skills :</u>

Objectives :

Todevelopanawarenessinthestudentsaboutthesignificanceofsilentreading andcomprehension.

- *To develop the ability of students to guess the meanings of words from contextandgrasptheoverallmessageofthetext,drawinferencesetc.*
- *Skimming and Scanning thetext.*
- *Understanding the gist of anargument.*
- *Identifying the topicsentence.*
- *Inferring lexical and contextualmeaning.*
- *Understanding discoursefeatures.*

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.*

<u>Writing Skills :</u>

Objectives :

- *To develop an awareness in the students about writing as an exact and formalskill.*
- *To equip them with the components of different forms of writing, beginning with the lower order ones. Writingsentences.*

- *Use of appropriatevocabulary.*
- *Paragraphwriting.*
- *Coherence andcohesiveness.*
- *Narration /description.*
- *NoteMaking.*
- *Formal and informal letterwriting.*

The following course content is prescribed for the Lab.

Exercise – I

CALL Lab*:*

Understand:ListeningSkill-Itsimportance–Purpose-Process-Types-Barriers ofListening.

Practice: Introduction to Phonetics – Speech Sounds – Vowels and Consonants.

ICS Lab *:*

Understand : Communication at Work Place- Spoken vs. Written language.

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

Exercise – II

CALL Lab*:*

Understand: Structure of Syllables – Word Stress and Rhythm– Weak Forms and Strong Forms in Context.

Practice: Basic Rules of Word Accent - Stress Shift - Weak Forms and Strong Forms in Context.

ICS Lab*:*

Understand: Features of Good Conversation – Non-verbal Communication.

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

Exercise - III

CALL Lab:

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

Practice: Common Indian Variants in Pronunciation – Differences in British and AmericanPronunciation.

ICS Lab*:*

Understand: How to make Formal Presentations.

Practice: Formal Presentations.

Exercise – IV

CALL Lab*:*

Understand: Listening for General Details.

Practice: Listening Comprehension Tests.

ICS Lab*:*

Understand: Public Speaking – Exposure to Structured Talks.

Practice: Making a Short Speech – Extempore.

Exercise – V

CALL Lab :

Understand: Listening for Specific Details.

Practice: Listening Comprehension Tests.

ICS Lab*:*

Understand: Interview Skills.

Practice: Mock Interviews.

Minimum Requirement of infrastructural facilities for ELCS Lab:

1. **ComputerAssistedLanguageLearning(CALL)Lab***hastoaccommodate 40studentswith40systems,withoneMasterConsole,LANfacilityandEnglish language learning software for self- study bystudents.*

System Requirement (Hardware component) :

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

i) Computers with SuitableConfiguration.

ii) High FidelityHeadphones.

2. **Interactive Communication Skills (ICS) Lab:** *A Spacious room with movable chairs and audio-visual aids with a Public-Address System, a LCD and a projectoretc.*

Prescribed Lab Manuals:

- *ELCS Lab Manual – A Workbook for CALL and ICS Lab Activities. Hyderabad, Orient Black Swan Pvt. Ltd. 2016.Print.*
- *Hart, Steve. Nair, Aravind R. and Bhambhani, Veena. EMBARK- English for Undergraduates. Delhi. Cambridge University Press. 2016.Print.*

Suggested Software :

- *Cambridge Advanced Learner's dictionary with CD,Fourth edition.*
- *Oxford Advanced Learner's Compass, 8th Edition, withCD.*
- *Hancock, Mark. English Pronunciation in Use: Intermediate. United Kingdom. Cambridge University Press,2007.*
- *TOEFL&GRE(KAPLAN,AARCO&BARRONS,USA,CrackingGREbyCLIFFS).*

References :

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

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J2507) IT AND ENGINEERING WORKSHOP

B.Tech. I Year IISEM:CSE **L T P C1**
0 22

Course Objectives :

1. *The IT Workshop is a training lab course to get training on PC Hardware, Internet & World Wide. Web and Productivity tools for documentation, Spreadsheet computations, andPresentation.*
2. *To introduce to a personal computer and its basic peripherals, the process of assembling a personal computer, installation of system software like MSWindows,Linuxandtherequireddevicedrivers,hardwareandsoftware level troubleshootingprocess.*
3. *To introduceconnectingthePContotheinternetfromhomeandworkplace and effectively usage of the internet, Usage of web browsers, email, newsgroups and discussionforums.*
4. *To introduce the usage of Productivity tools in crafting professional word documents,excelspreadsheetsandpowerpointpresentationsusingopen office tools andLaTeX.*
5. *To provide hands on experience about use of different engineeringmaterials, tools,equipments and processes those are common in the engineeringfield.*

LIST OF EXPERIMENTS :

Machine Issues: (2 problems)

Problem 1: Hardware Troubleshooting*: Students have to be given a PC which does not boot due to improper assembly or defective peripherals. They should identify the problem and fix it to get the computer back to working condition. The work done should be verified by the instructor followed by a viva.*

Problem 2: a) Software Troubleshooting: *Students have to be given a malfunctioning CPU due to system software problems. They should identify the problem and fix it to get the computer back to working condition. The work doneshouldbeverifiedbytheinstructorandfollowedbyaviva.*

b) OS Installation and Hard Drive Partitioning Internet & World Wide Web (4 Problems).

Problem 3: Orientation & Connectivity Boot Camp: *Students should get connected to their Local Area Network,access the Internet and transfer files from one system to another system across the LAN. In the process they* *configure the TCP/IP setting. Finally students should demonstrate, to the instructor, how to access the websites and email. If there is no internet connectivity preparations need to be made by the instructors to simulate the WWW on the LAN.*

Problem 4: Web Browsers, Surfing the Web: *Students customize their web browsers with the LAN proxy settings, bookmarks, search toolbars and pop up blockers. Also, plug-ins like Macromedia Flash and JRE for applets should be configured.*

Problem5:SearchEngines&Netiquette:*Studentsshouldknowwhatsearch enginesareandhowtousethesearchengines.Afewtopicswouldbegivento the students for which they need to search on Google. This should be demonstrated to the instructors by thestudent.*

Problem6:CyberHygiene:*Studentswouldbeexposedtothevariousthreats on the internet and would be asked to configure their computer to be safe on theinternet.Theyneedtofirstinstallantivirussoftware,configuretheirpersonal firewall and windows update on their computer. Then they need to customize their browsers to block pop ups, block active x downloads to avoid viruses and/orworms.*

Productivity Tools: LaTeX and FOSS Text Processing Tools (4 Problems)

Problem7:DocumentPreperation:*Thementorneedstogiveanoverviewof LaTeX and FOSS tools: Importance of LaTeX and FOSS tools for text processing,Detailsofthefourtasksandfeaturesthatwouldbecoveredin each,UsingLaTeXandtextProcessor–Accessing,overviewoftoolbars,saving files, Using help and resources, rulers, formatpainter.*

Problem8:UsingLaTeXandFOSSTextProcessingTools*tocreateproject certificate. Features to be covered: Formatting Fonts, Drop Cap, Applying Text effects,UsingCharacterSpacing,BordersandColors,InsertingHeaderandFooter, UsingDateandTimeoptioninbothLaTeXandFOSSTextProcessingTools.*

Problem9:TextLayouts:*abstractFeaturestobecovered:-FormattingStyles, Insertingtable,BulletsandNumbering,ChangingTextDirection,Cellalignment, Footnote, Hyperlink, Symbols, Spell Check, TrackChanges.*

Problem10:CreatingaNewsletter:*Featurestobecovered:-TableofContent, Newspaper columns, Images from files and clipart, Drawing toolbars and text highlights, Formatting Images, Textboxes and Paragraphs usingFOSS.*

Spreadsheet: (3 Problems)

Problem 11: Spreadsheet Orientation: *The mentor needs to tell the importance of FOSS Spreadsheet tools, give the details of the four tasks and features that would be covered in each.*

Problem 12: *Using Spreadsheet –Accessing, overview of toolbars, saving files,Usinghelpandresources,CreatingaScheduler***,***Gridlines,FormatCells, Summation, auto fill and FormattingText.*

Problem 13: Calculating GPA - *Features to be covered:- Cell Referencing, Formulae in spreadsheet – average, standard deviation, Charts, Renaming and Inserting worksheets, Hyper linking, Aggregates and lookups, Sorting, , Conditional formatting.*

LaTeX and FOSS Slide shows (3 Problems)

Problem 14 :*Students will be working on basic slide show utilities and tools which help them create basic power point presentation. Topic covered during thisproblemincludes:SlideLayouts,InsertingText,TexthighlightingFormatting Text, Bullets and Numbering, Auto Shapes, Lines and Arrows in both LaTeX and FOSS Tool. Students will be given model slide shows which need to be replicated. (Exactly how it'sasked).*

Problem 15: *Second Problem helps students in making their presentations interactive. Topic covered during this problem includes: Hyperlinks, Inserting – Images, Image galleries, Audio, Video, Objects, Tables and Charts*

Problem 16: *Concentrating on the in and out of FOSS Slide shows and presentations in LaTeX. Helps them learn best practices in designing and preparing slide shows. Topic covered during this problem includes: Master Layouts (slide, template, and notes), Types of views (basic, presentation, slide slotter,notesetc),Inserting–Background,textures,DesignTemplates,Hidden slides.*

Engineering Workshop :

Workshop Practice: (Two exercises are required to perform from each trade)

1. *Fitting*
2. *Carpentry*
3. *TinSmithy*
4. *Housewiring*
5. *Plumbing*

Text Books :

1. *Introduction to Information Technology, ITL Education Solutions limited, PearsonEducation.*
2. *LaTeX Companion – Leslie Lamport,PHI/Pearson.*
3. *Introduction to computers, Peter Norton, 6/e Mc GrawHill.*
4. *Upgrading and Repairing, PC's 18th e, Scott Muller QUE, Pearson Education.*
5. *Complex Information Technology course tool kit Vikas Gupta, WILEY Dreamtech.*
6. *ITEssentialsPCHardwareandSoftwareCompanionGuideThirdEdition.*
7. *PC Hardware and A+ Handbook – Kate J. ChasePHI.*
8. *Workshop Manual – P.Kannaiah / K.L.Narayana/ScitechPublishers.*

Course Outcomes :

1. *Apply knowledge for computer assembling and softwareinstallation.*
2. *Ability how to solve the trouble shooting problems.*
3. *Apply the tools for preparation of PPT, Documentation and budget sheet etc.*
4. *Usage of Web browsers to access Internet, SearchEngines.*
5. *Ability to apply the knowledge of FOSS and Practice on manufacturing of components using workshop trades including plumbing,fitting, carpentry, tinsmithy and housewiring.and enhance the skills in several engineering applicatinos*

Note: *Students should be able to use FOSS like Open Office, Zoho Docs, Libre Office, Soft Maker Free Office, Google Doss, Think Free Online, Live Document etc.*

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J3005) PROBABILITY AND STATISTICS

B.Tech II-YearI-Semester-CSE **L T P C**
3 1 0 4

Pre-requisites: *Mathematical Knowledge at pre-university level*

Objectives: *The Students able to learn*

1. *The ideas of probability and random variables and various discrete and continuous probability distributions and theirproperties.*
2. *The basic ideas of statistics including measures of central tendency, correlation andregression.*
3. *The statistical methods of studying datasamples.*

UNIT – I

Basic Probability: *Probability spaces, conditional probability, independent events,andBayes'theorem.Randomvariables:Discreteandcontinuousrandom variables, Expectation of Random Variables, Moments, Variance of random variables, Chebyshev'sInequality.*

UNIT – II

DiscreteProbabilitydistributions:*Binomial,Poisson,evaluationofstatistical parameters for these distributions, Poisson approximation to the binomial distribution.*

UNIT – III

ContinuousRandomvariable&Distributions:*Continuousrandomvariables and their properties, distribution functions and densities, Normal, exponential and gamma distributions, evaluation of statistical parameters for these distributions.*

UNIT – IV

Applied Statistics: *Curve fitting by the method of least squares- fitting of straight lines, second degree parabolas and more general curves; Correlation and regression – Rank correlation.*

UNIT – V

Testing of Hypothesis: *Test of significance: Large sample test for single proportion, difference of proportions, single mean, difference of means; Test forsinglemean,differenceofmeansforsmallsamples,testforratioofvariances for smallsamples.*

Text Books :

1. *Ronald E. Walpole, Raymond H. Myers, Sharon L. Myers, keying Ye, Probability and statistics for engineers and scientists, 9th Edition, Pearson Publications.*

2. *FundamentalsofMathematicalStatistics,KhannaPublications,SCGuptha and V.K.Kapoor.*

References :

1. *Miller and Freund's, Probability and Statistics for Engineers, 8th Edition, PearsonEducations.*

2. *S. Ross, A First Course in Probability, 6th Ed., Pearson Education India, 2002.*

Outcomes : *After learning the contents of this paper the student must be able to*

1. Formulate and solve problems involving random variables and apply statistical methods for analysing experimental data.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J3409) DIGITAL SYSTEM DESIGN

II Year IISem.:ECE **L T PC**

II YearISem:CSE **3 0 0 3**

COURSE OBJECTIVE :

1. *This Subject exposes the students to learn DigitalFundamentals.*
2. *StudentwillbeabletoDesign,AnalyzeandInterpretCombinationalDigital Circuits.*
3. *Student will be able to Design, Analyze and Interpret Sequential Digital Circuits.*
4. *Learn logic principles to various combinational and sequentialcircuits.*
5. *Understands the concepts of logicfamilies.*

UNIT- I : NUMBER SYSTEMS & BOOLEAN ALGEBRA

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

UNIT-II : GATE LEVEL IMPLEMENTATION AND MINIMIZATION

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

UNIT-III : COMBINATIONAL LOGIC DESIGN

Combinational Circuit, Analysis Procedure, Design Procedure, Examples of CombinationalDigitalCircuits(Adders,Subtractor,Adder-Subtractoretc.)Serial and parallel adders, BCD Adder. Comparators, Multiplxers, Demultiplexer, Encoder,Decoder.HazardsinCombinationalCircuits,Hazardsfreerealization.

UNIT-IV : SEQUENTIAL LOGIC DESIGN

Introduction to sequential Circuits: Latches and Flip-Flops (RS,JK, D, T and Master Slave), Design of Clocked Flip-Flop, Flip-Flop Conversion, Ripple and Synchronous Counters, Shift Registers, Finite State Machine Design and Analysis.

UNIT-V: *Introduction to Logic Families: TTL, ECL, CMOS, PAL, PLA, PLD, FPGA, CPLD etc.*

TEXT BOOKS :

1. *Maris Mano: "Digital Design" Prentice Hall1993.*
2. *RP Jain : Modern Digital Electronics Tata McGraw Hill 4th Edition2009.*

REFERENCE BOOKS :

1. *Charles H.Roth : Digital System Design usingVHDL.*
2. *Zvi Kohavi : Switching and Finite Automata Theory, CAMBRIDGE 3rd Edition.*

Course Outcomes :

1. *Student understands Digital logic Principles, Number systemsetc.*
2. *UnderstandstheBinarylogicprinciplesinimplementingGatelevelDesign.*
3. *Understands and applying the CombinationalCircuits.*
4. *Understands and applying the sequential circuit logic in applications of Memeories, Registers, Flip-Flops andcounters.*
5. *Understands and applying theVarious logic level in Logic families.And enhance the skills in employability*

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J3419) COMPUTER ORGANIZATION

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

Objectives :

1. *To understand basic components ofcomputers.*
2. *To explore the I/O organizations indepth.*
3. *To explore the memoryorganization.*
4. *Organization of I/Odevices.*
5. *Pipeliningconcepts.*

UNIT I:

BASIC STRUCTURE OF COMPUTERS*: Computer Types, Functional units, Basic operational concepts, Bus Structures, Software, Performance, Multiprocessors and multi computers.Instruction Codes, Computer Registers, Computerinstructions,Instructioncycle,Instructionformats,AddressingModes, STACKorganization.*

UNIT II:

PROGRAMCONTROL:*StatusBitConditions,ConditionalBranchInstructions, Program Interrupts: Types OfInterrupts.*

MICROPROGRAMMEDCONTROL*:Controlmemory,hardwiredcontrol,Micro programmed control, Address sequencing, micro program example, design of controlunit.*

UNIT III:

MEMORY ORGANIZATIONS: *Memory hierarchy, Main Memory, RAM, ROM Chips,MemoryAddressMap,MemoryConnectiontoCPU,Associatememory, Cache Memory, Virtualmemory.*

UNIT-IV:

INPUT-OUTPUTORGANIZATION*:PeripheralDevices,InputOutputInterface, Asynchronousdatatransfer,ModesofTransfer,PriorityInterrupt,Directmemory Access, Input –Output Processor (IOP), Serialcommunication.*

UNIT V:

PIPELINE AND VECTOR PROCESSING*: Parallel Processing, Pipelining, Arithmetic Pipeline, Instruction Pipeline, RISC Pipeline, Vector Processing, Array Processors.*

TEXT BOOKS :

1. *Computer Organization – Carl Hamacher, Zvonks Vranesic, SafeaZaky, Vth Edition, McGrawHill.*
2. *Computer Systems Architecture – M.Moris Mano, IIIrd Edition, Pearson/ PHI.*

REFERENCES :

1. *Computer Organization and Architecture – William Stallings Sixth Edition, Pearson/PHI.*
2. *Structured Computer Organization – Andrew S. Tanenbaum, 4th Edition, PHI/Pearson.*
3. *Fundamentals of Computer Organization and Design, - Sivaraama Dandamudi, Springer Int.Edition.*
4. *Computer Architecture a quantitative approach, John L. Hennessy and DavidA.Patterson, Fourth Edition,Elsevier.*
5. *Computer Architecture: Fundamentals and principles of ComputerDesign, JosephD. Dumas II, BSPublication.*

Course outcomes:

1. *Ability to model, understands, and develops complex software for system software as well as applicationsoftware.*
2. *The broad education necessary to understand the impact of computer science and engineering solutions in the scientific, societal and human contexts.*
3. *Knowledge of contemporary issues be able to manipulate numeric informationindifferentforms,e.g.,differentbases,signedintegers,various codes such as ASCII, Gray, andBCD.*
4. *Beabletounderstandaboutthememoryofcomputerindetail.*
5. *Be able to design and analyze combinational circuits and to use standard combinationalfunctions/buildingblocktobuildmorecomplexcircuits.*

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

J3E12 ORGANIZATIONAL BEHAVIOR

L P C
3 -3

Course objectives :

1. *Define basic organizational principles and analyze how these influences behavior in the workplace.*
2. *Discuss the theories of motivation and leadershipFamiliarize.*
3. *The students with the basic understanding of individual behavior and explore issue of power ,politics, conflicts andnegotiations.*
4. *Organizational objectives are short- and medium-term goals that an organization seeks to accomplish so it might reach its overall strategic goals.*
5. *That can provide useful guidance for employees seeking to please their managers.*

Course outcome :

1. *The students should be able to learn the history of management and the contributions of important managementresearchers.*
2. *They should be able to understand the relevance of environmental scanning, planning and how to take decisions.*
3. *The students can learn how to delegate authority and use power to influence people to get the work done through proper communication and control.*
4. *Surfacing of assumptions that may beinaccurate.*
5. *Clarification of individual views that buildlearning.*

Unit – I

History of Management: *Theories of Management-Classical, Scientific, Administrative, Behavioral, Management Sciences Theories; Systems and Contingency theory.*

Case1: Work Force Diversity.

Unit – II

Problem solving, Decision Making and Planning: *Problem Solving and Decision making, Classify and define the problem, set objectives, generate creative and innovative alternatives, analysis of alternatives, and select the mostfeasibleplan,implementdecisionandcontrol,Plans,typesofplans,steps involved in planningprocess.*

Unit – III

Organizing and controlling: *Principles of organizing, organizational design, relation between authority, power and influence; organizational functional and control systems, types of controls.*

Unit – IV

Organizational Behavior – individual and group behavior: *Importance of OB,personalitytheories,perception,perceptionandindividualdecisionmaking; formation of group behavior, classification of groups, group properties, group cohesiveness, group decision making process andtypes.*

Unit – V

Leadership, Motivation and Organizational Structure: *Leadership theories, Power and Politics, Maslow's needs theory, two factor theory of motivation, McGregor's theory, ERG theory, McCellands needs theory, Valance Theory and other relevant theories of motivation.*

REFERENCES :

1. *Robert N. Lussier, Management Fundamentals – Concepts, Applications, Skill Development, Cengage Learning, First Edition,2012.*
2. *StephenP.Robbins,Timothy:OrganizationalBehavior,Pearson14thEdition, 2012.*
3. *L. M. Prasad, Principles and Practices of Management, Revised Edition, Sulthan ChandPublushings.*
4. *Udai Pareek, Sushma Khanna, Organizational Behavior, 3e, Oxford Publishing.*
5. *KavithaSigh,Organizationalbehavior,TextandCases,3/e,Vikaspublishing*
6. *Griffin &Moorhead, Organizational Behaviour, 10th Edition, Cengage Publishing.*

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J3508) DATA STRUCTURES

B.Tech. II Year ISem:CSE **L T P C3**
0 03

Course Objectives :

1. *Basicdatastructuresanditsusageinhandlingrealworldapplications.*
2. *Representingthedatausinglineardatastructuressuchasqueues,circular queues, dequeue, priority queue, and using non-linear data structures such astrees.*
3. *Representing and retrieving the data in the form of various types of trees and graph datastructures.*
4. *Searching of data with the help of various search methods, to sort data using various sortingmethods.*
5. *Storeandretrievedataeffectivelyusingvarioushashingmethods.*

Syllabus :

UNIT - I

Basic Concepts: *Algorithm specification- Introduction, Performance analysis and measurement- Performance analysis, Performance measurement.*

Arrays*: The arrays as an abstract data type, the polynomial abstract data type, sparse matrices- Introduction, Sparse matrix representation, transposing a matrix.*

Stacks and Queues: *The stack abstract data Type, The queue abstract data type,Evaluationofexpressions-Expressions,Postfixnotations,Infixtopostfix, Infix toprefix.*

UNIT - II

Linked Lists*: Singly linked lists and chains, Representing chains, Circular lists, Linked stacks and Queues, Polynomials, Doubly linked lists.*

Trees*: Introduction, Binary trees- The abstract data type, Properties of binary trees, Binary tree representations, Binary tree traversals and Tree iterator- Introduction,Inordertraversal,Preordertraversal,Postordertraversal,Iterative traversals. Threaded binary trees, Heaps, Binary search trees- Definition, Searching a binary search tree, Insertion into a binary search tree, Deletion from a binary search tree, Joining and Splitting binary search trees, Height of a binary searchtree.*

UNIT - III

Graphs: *The graph abstract data type- Introduction, Definition, Graph representation, Elementary graph operations- Depth first search, Breadth first* *search,Connectedcomponents,Spanningtrees,Minimumcostspanningtrees-Kruskal's algorithm, Prim's algorithms, Shortest paths- All pairs shortestpaths.*

Efficient Binary Search Trees: *Optimal binary search trees, AVL trees.*

Multiway Search Trees: *M-way search trees, B-trees, B+ trees.*

UNIT - IV

Sorting and Searching: *Searching, Search techniques- Binary search, Fibonaccisearch,Sorting-Typesofsorting,Generalsortconcepts,Bubblesort, Insertion sort, Selection sort, Quick sort, Heap sort, Merge sort, Comparison of all sortingmethods.*

UNIT-V

Hashing: *Introduction, Key terms and issues, Hash functions, Collision resolution strategies, Hash table overflow, Extendible hashing.*

Text Book :

1. *Ellis Horowitz, Sartaj Sahani, Dinesh Metha, "Fundamentals of Data Structures in C++", Universities Press, 2nd Edition, ISBN-978 81 7371 606 5,2008.*
2. *Varsha H.Patil, "Data Structures Using C++", Oxford University Press, 1st Edition, ISBN-10: 0-19-806623-6, ISBN-13: 978-0-19-806623-1, 2012 (Chapters: 9,11).*

Reference Books :

1. *D. Samanta, "Classic Data Structures", Prentice Hall India, 2nd Edition, ISBN- 978-203-3731-2,2009.*
2. *Mark Allen Weiss, "Data Structure & Algorithm Analysis in C++", Pearson Education, 3rd Edition, ISBN-10: 81-3171-474-8, ISBN-13:97-8813-1714-744,2007.*

Course Outcomes :

1. *Implementthebasicsofdatastructuresinhandlingrealworldapplications.*
2. *Represent data using linear data structures such as queues, circular queues, dequeue, priority queue, and using non-linear data structures such as trees andgraphs.*
3. *Represent and retrieve the data in the form of various non-linear data structures like trees andgraphs.*
4. *Search for data with the help of various searching techniques*
5. *.Store and retrieve data using various hashingtechniques.*

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J3509) DATA STRUCTURES LAB

B.Tech. II Year ISem:CSE **L T P C0 0 42**

Course Objectives :

This course will develop students' knowledge in/on.

1. *Concepts,operationsandimplementationdetailsofvariousdatastructures.*
2. *ImplementingthedifferentalgorithmsusingC++programminglanguage.*
3. *Improving the student capability in applying various data structures in differentapplications.*
4. *Different types of sortingtechniques.*
5. *Different types of searchingtechniques.*

LIST OF EXPERIMENTS :

Experiment-I

1. *Program to implement arrayoperations.*
2. *Program to display sparse representation for a given m*nmatrix.*
3. *Program to read a sparse matrix and display itstranspose.*

Experiment-II

4. *Program to perform addition of two sparsematrices.*
5. *Program to implement stack operations usingarrays.*

Experiment-III

6. *Program to implement multiple stacks in singlearray.*
7. *Program to convert infix expression intopostfix.*
8. *Program to convert given infix expression into prefixnotation.*
9. *Program to evaluate given postfixexpression.*

Experiment-IV

10. *Program to implement queue operations usingarrays.*
11. *Program to implement circular queue operations usingarrays.*

Experiment-V

12. *Program to create single linked list and implement itsoperations.*

i. *Insert.*

ii. *Delete.*

iii. *Search.*

iv. *Reverse.*

13. *Program to create single linked list and implement its operations with separate headernode.*

i. *Insert.*

ii. *Delete.*

iii. *Search.*

iv. *Reverse.*

Experiment-VI

14. *Program to implement double linked list and itsoperations.*

15. *Program to implement double linked list and its operations with separate headernode.*

Experiment-VII

16. *Programtoimplementcircularsinglelinkedlistanditsoperations.*

17. *Programtoimplementcirculardoublelinkedlistanditsoperations.*

Experiment-VIII

18. *Program to implement stack operations using linkedlist.*

19. *Program to implement queue operations using linkedlist.*

Experiment-IX

20. *Implementation of binary tree and its traversal techniques using recursive and non recursivemethods.*

21. *Programtocreateabinarysearchtreeandperformthetreeoperations.*

a) Insertion of a node b) Deleting a node.

Experiment-X

22. *Implement the following graph traversaltechniques.*

a) *Depth first search b) Breadth firstsearch.*

Experiment-XI

23. *Program to implement FibonacciSearch.*

24. *Program to implement insertion sort technique.*

25. *Program to implement selection sort technique.*

26. *Program to implement quick sorttechnique.*

Experiment-XII

27. *Program to implement merge sorttechnique.*

28. *Program to implement heap sorttechnique.*

Text Book :

1. *Ellis Horowitz, Sartaj Sahani, Dinesh Metha, "Fundamentals of Data Structures in C++", Universities Press, 2nd Edition, ISBN-978 81 7371 606 5,2008.*
2. *Varsha H.Patil, "Data Structures Using C++", Oxford University Press, 1st Edition, ISBN-10: 0-19-806623-6, ISBN-13: 978-0-19-806623-1, 2012 (Chapters: 9,11).*

Course Outcomes (COs) :

Upon completion of this course, students will be ableto…

1. *Know practical knowledge improves skills about implementing various data structures usingC++.*
2. *Understand the knowledge about how various data structures will be implementedlikeArrays,stacks,queues,linkedlist,trees,andgraphs.*
3. *Implement various sortingtechniques.*
4. *Implement various searchingtechniques.*
5. *Apply these data structures efficiently to develop different software applications.*

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(UGC-AUTONOMOUS)

(J3510) SCRIPTING LANGUAGES LAB

B.Tech II YearI-Sem:CSE **L T P C0**
0 42

Course Objectives :

1. *Effectively applies knowledge of Perl, PHP and Python to new situations and learns from theexperience.*
2. *Analyse requirements of software systems for the purpose of determining the suitability of implementing in Perl /PHP/Python;*
3. *Analyse and model requirements and constraints for the purpose of designingandimplementingsoftwaresystemsinPerl,PHPandPython;*
4. *Evaluate and compare designs of such systems on the basis of specific requirements andconstraints.*
5. *Design and implement Perl,PHP and Python software solutions that accommodate specified requirements and constraints, based on analysis or modelling or requirementsspecification.*

LIST OF EXPERIMENTS :

Thiscourseprovidesanintroductiontothescriptprogrammingparadigm, and introduces scripting languages such as Perl, PHP andPython.

PERL :

1. a) Write a Perl script to find the largest number among threenumbers.

b) Write a Perl script to print the multiplication tables from 1-10 using subroutines.

2. Write a Perl program to implement the following list of manipulating functions.

a) Shift

b) Unshift

c) Push

3. WriteaPerlscripttosubstituteaword,withanotherwordinastring.

4. WriteaPerlscripttovalidateIPaddressandemailaddress.

5. Write a Perl script to print the file in reverse order using command line arguments.

PHP :

1. *Write a PHP script to print prime numbers between1-50.*
2. *PHP scriptto*
   a. *Find the length of astring.*
   b. *Count no of words in astring.*
   c. *Reverse astring.*
   d. *Search for a specificstring.*
3. *Write a PHP script to merge two arrays and sort them as numbers, in descendingorder.*
4. *WriteaPHPscriptthatreadsdatafromonefileandwriteintoanotherfile.*

PYTHON :

1. *Write a python program to solve a quadraticequation.*
2. *a) Write a python program to find the factorial of anumber.*
   b) Write a python program to generate Fibonacci series.
3. *Write a python program to make a simplecalculator.*
4. *Write a python program to sort words in alphabeticalorder.*
5. *Write a python program to add twomatrices.*

Text Books :

1. *Programming Perl, 4th edition. Larry Wall, Tom Christiansen, and Jon Orwant. O'Reilly,2012.*
2. *Programming PHP, 3rd edition. Rasmus Lerdorf, Kevin Tatroe, and Peter MacIntyre. O'Reilly,2013.*
3. *ProgrammingPython,4thedition.PowerfulObject-OrientedProgramming. Mark Lutz. O'Reilly,2010.*

Course Outcomes :

1. *Comprehend the differences between typical scripting languages and typical system and application programminglanguages.*
2. *GainknowledgeofthestrengthsandweaknessofPerl.*
3. *GainknowledgeofthestrengthsandweaknessofPHP.*
4. *Gain knowledge of the strengths and weakness ofPython.*
5. *Select an appropriate language for solving a givenproblem.*

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(JMC01) ENVIRONMENTAL STUDIES

B.Tech.- II Yr I Sem: Commontoall **L TPC3**
0 00

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 andregulations.*

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:n
Natural Resources:
*ClassificationofResources,LivingandNon-Livingresources,water***resources:** *use and over utilization of surface and ground water, floods and droughts, Dams: benefits and problems.* **Energy resources:** *growing energy needs, renewableandnonrenewableenergysources,useofalternateenergysource, casestudies.*

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.*

SoilPollution:*Sourcesandtypes,Impactsofmodernagriculture,degradation ofsoil.* **NoisePollution:***SourcesandHealthhazards,standards,* **Solidwaster:** *MunicipalSolidWastemanagement,compositionandcharacteristicsofe-Waste anditsmanagement.* **Pollutioncontroltechnologies:***WastewaterTreatment methods: Primary, secondary andTertiary.*

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. Internationalconventions / Protocols: Earth summit, Kyoto protocol and Montreal Protocol.*

SUGGESTED TEXT BOOKS:

1. *Textbook of Environmental Studies for Undergraduate Courses by Erach Bharucha for University GrantsCommission.*
2. *Environmental Studies by R. Rajagoplalan, Oxford UniversityPress.*

REFERENCE BOOKS :

1. *Environmental Science: towards a sustainable future by Richard T.Wright. 2008 PHL Learning Private Ltd. NewDelhi.*
2. *EnvironmentalEngineeringandsciencebyGilbertM.MastersandWendell P. Ela 2008 PHI Learning Pvt. Ltd.*
3. *EnvironmentalSciencebyDanielB.Botkin&EdwardA.Keller,WileyINDIA edition.*
4. *Environmental Studies by Anubha Kaushik, 4th Edition, New age internationalpublishers.*
5. *Text book of Environmental Science and Technology – Dr. M. Anji Reddy 2007, BSPublications.*
6. *The syllabus of Environmental Studies prescribed by UGC/JNTUH is approved foradoption.*

COURSE OUTCOMES :

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

1. *Understanding ofEcosystem.*
2. *Natural resources. Depletion of natural resources & prevention of natural resources.*
3. *Biodiversity Protection, sharing of thebiodiversity.*
4. *Environmental pollution Understanding of water, soil, noise, air pollutions and their controlmeasurements.*

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J4004) DISCRETE MATHEMATICS

B.Tech. II Year IISEM:CSE **L T P C3**
0 03

Course Objectives :

1. *To introduce Mathematical Logic, especially First Order Logic to students intending to graduate in ComputerScience.*
2. *To introduce proof techniques such as Mathematical Induction and Contradiction.*
3. *To Develop an understanding of counting, functions andrelations.*
4. *To make the students familiar with fundamental notions and applicability of algebraicsystems.*
5. *To make the students familiar with fundamental notions of graphtheory.*

UNIT-I

Fundamental Principles of counting: *The Rules of Sum and Product, permutations, Combinations: Binomial Theorem.*

Introduction to Propositional Calculus*: Basic Connectives and Truth tables, Logical Equivalence: Laws of Logic, Logical Implication: Rules of Inference.*

Predicates*: The Use of Quantifiers, Quantifiers, Definitions and the Proofs of Theorems.*

UNIT-II

Sets: *Sets and Subsets, Operations on sets and the Laws of Set Theory, Counting and Venn Diagrams.*

Relations and Functions: *Cartesian Products and Relations, Functions:one-one and Onto Pigeonhole principle, partial ordering relations, POSET, hasse diagrams, Equivalence relations.*

UNIT-III

Generating function: *Generating Functions, Function of Sequences, Calculating Coefficient of generating function.*

Recurrence Relations: *The First Order Linear Recurrence Relation, Second Order Linear. Homogenous Recurrence relations with constant coefficients, NonHomogenousRecurence relations.*

UNIT-IV

Introduction to graphs*: Graphs and their basic properties - degree, path, cycle, Sub graphs, Complements and Graph Isomorphism, Euler trails and circuits, planar graphs, Hamiltonian paths and cycles, Graph Coloring and Chromatic polynomial.*

Trees*: Definitions, Properties, Rooted Trees, Spanning Trees, Minimum Spanning trees : The Algorithms of Kruskal and Prim.*

UNIT-V

Algebraic Structures: *Algebraic Systems: Examples and General Properties, Semigroups and Monoids, Groups: Definitions and Examples, Subgroups and Homomorphisms.*

Lattices: *Lattices as Partially Ordered Sets, Lattices as Algebraic Systems.*

Text books :

1. *Ralph P. Grimaldi, Discrete and Combinatorial Mathematics, An Applied Introduction, 4th edition, Pearson Education,2003.*
2. *J.P. Tremblay, R.Manohar, Discrete Mathematical Structures with Applications to Computer Science, TATA McGraw-Hill Edition,1995.*

Reference Books :

1. *Kenneth H. Rosen, Discrete Mathematics and its Applications, 7th edition, Tata McGraw-Hill,2005.*
2. *Joe L.Mott, Abraham Kandel, Theodore P. Baker, Discrete Mathematics forComputerScientists&mathematicians,2ndEdition,PHI,1986.*
3. *David D.Railey,Kenny A.Hunt, Computational Thinking for the modern problem solving, CRCPress,2014.*
4. *Uwe Naumann,Olaf Scherk, Combinatorial Scientific Computing,CRC Press,2012.*

Course Outcomes :

1. *Distinguish between Propositional Logic and PredicateLogic.*
2. *Apply induction and other proof techniques towards solving recurrences and other problems in elementaryalgebra.*
3. *Have an understanding of elementary combinatorics.and distinguish between functions andrelations.*
4. *DealwithproblemswhichmayariseinComputerScienceandEngineering in nearfuture.*
5. *Better equipped for examinations involving placementopportunities.*

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(UGC-AUTONOMOUS)

(J4511) DESIGN AND ANALYSIS OF ALGORITHMS

B.Tech. II Year IISem:CSE **L T P C3 0 03**

Course Objectives :

This course will develop students' knowledge in/on

1. *Techniques for effective problem solving incomputing.*
2. *Analyzing the algorithms and calculating theircomplexity.*
3. *Designing algorithms using greedy strategy, divide and conquer approach and dynamicprogramming.*
4. *Backtracking and least costsearch.*
5. *Fundamental computability concepts and the complexity of classes P, NP andNP-complete.*

Syllabus:

UNIT-I

Introduction:*Algorithmanalysis,Performanceanalysis,Spacecomplexityand time complexity, Big 'O' notation, Omega notation, Theta notation, Different mathematical approach's for solving Time complexity ofAlgorithms.*

Sets and disjoint set union*: Introduction, Union, Find operations.*

UNIT-II

Divide and conquer: *General method, Binary search, Merge sort, Quick sort, Strassen's matrix multiplication.*

Greedy method: *General method, Knapsack problem, Job sequencing with deadlines, Minimum cost spanning trees, Optimal storage on tapes, Optimal merge patterns, Single source shortest paths.*

UNIT-III

Dynamicprogramming:*Generalmethod,Multistagegraphs,Allpairsshortest paths,Singlesourceshortestpaths.Optimalbinarysearchtrees,Stringediting, 0/1 Knapsack problem, Reliability design problem, Travelling sales person problem.*

UNIT-IV

Back tracking: *General method, N-Queens problem, Sum of subsets, Graph coloring problem, Hamiltonian cycles.*

Branch and bound: *General method, Least cost (LC) search, the 15-puzzle problem, Control abstractions for LC search, 0/1 Knapsack problem, Travelling salesperson problem.*

UNIT-V

NP Hard and NP complete problems*: Basic concepts - Nondeterministic algorithms, The classes NP hard and NP complete; COOK's Theorem, NP hard graph problems - Clique decision problem, Node cover decision problem, Traveling salesperson decision problem.*

Text Books :

1. *E.Horowitz, S.Sahni, S.Rajasekaran, "Fundamentals of Computer Algorithms",2ndEdition,UniversitiesPress,ISBN:978-8173716126,2008.*

Reference Books :

1. *Thomas H.Cormen, Charles E.Leiserson, Ronald L.Rivest, Cliford Stein, "Introduction to Algorithms", 3rd Edition, Prentice-Hall of India, ISBN: 978-81-203-4007-7,2010.*
2. *S.Sridhar, "Design and Analysis of Algorithms", Oxford University Press, India, ISBN -13: 978-0-19-809369-5, ISBN-10: 0-19-809369-1,2015.*

Course Outcomes: *Upon completion of this course, students will be able to*

1. *Argue the correctness of algorithms using inductive proofs andinvariants.*
2. *Analyze the time and space complexity of analgorithms.*
3. *Design algorithms using greedy strategy and dynamicprogramming.*
4. *Identify algorithm design methodology to solveproblems.*
5. *Analyze the classes P,N and NP Complete and be able to prove that a certain problem is NPcomplete.*

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J4512) JAVA PROGRAMMING

B.Tech. II YearII-Sem:CSE **L T P C3 0 03**

Course Objectives :

1. *Understand fundamentals of programming such as variables, conditional and iterative execution, methods,etc.*
2. *Understand fundamentals of object-oriented programming in Java, includingdefiningclasses,invokingmethods,usingclasslibraries,etc.*
3. *Be aware of the important topics and principles of softwaredevelopment.*
4. *Have the ability to write a computer program to solve specifiedproblems.*
5. *BeabletousetheJavaSDKenvironmenttocreate,debugandrunsimple Javaprograms.*

UNIT-I *:*

Javaprogramming-*HistoryofJava,Javabuzzwords,comments,datatypes, variables, constants, scope and life time of variables, operators, operator hierarchy,expressions,typeconversionandcasting,enumeratedtypes,control flowblockscope,conditionalstatements,loops,breakandcontinuestatements, simplejavastandaloneprograms,arrays,consoleinputandoutput,formatting output, constructors, methods, parameter passing, static fields and methods, accesscontrol,thisreference,overloadingmethodsandconstructors,recursion, garbage collection, building strings, exploring stringclass.*

UNIT-II :

Inheritance - *Inheritance hierarchies super and sub classes, Member access rules, super keyword, and preventing inheritance: final classes and methods, the Object class and its methods.***Polymorphism -** *dynamic binding, method overriding, abstract classes and methods.***Interfaces -** *Interfaces vs. Abstract classes, defining an interface, implementing interfaces, accessing implementations through interface references, extending interfaces.* **Packages -** *Defining, Creating and Accessing a Package, Understanding CLASSPATH, importing packages.*

UNIT-III *:*

Exception handling - *Dealing with errors, benefits of execution handling, the classificationofexceptions-exceptionhierarchy,checkedexceptionsandunchecked exceptions,usageoftry,catch,throw,throwsandfinally,rethrowingexceptions, exceptionspecification,builtinexceptions,creatingownexceptionsubclasses.*

Multithreading - *Difference between multiple processes and multiple threads, thread states, creating threads, interrupting threads, thread priorities, synchronizing threads, inter-thread communication, procedure consumer pattern.*

UNIT-IV :

Applets - *Inheritance hierarchy for applets, differences between applets and applications, life cycle of an applet, passing parameters to applets, applet security issues.*

GUIProgrammingwithJava-*TheAWTclasshierarchy,IntroductiontoSwing, Swingvs,AWT,HierarchyforSwingcomponents,Containers-JFrame,JApplet, JDialog, JPanel, Overview of some swing components Jbutton, JLabel, JTextField,JTextArea,simpleswingapplications,Layoutmanagement-Layout manager types - border, grid andflow.*

Event handling - *Events, Event sources, Event classes, Event Listeners, Relationship between Event sources and Listerners, Delegation event model, Examples: handling a button click, handling mouse events, Adapter classes.*

UNIT-V *:*

Files - *streams - byte streams, character streams, text input/output, binary input/output,randomaccessfileoperations,FilemanagementusingFileclass.*

Collection Framework in Java - *Introduction to Java Collections, Overview of Java Collection frame work, Generics, Commonly used Collection classes Array List, Vector, Iterator, String Tokenizer,Random,Scanner,Calender and Properties.*

ConnectingtoDatabase-*JDBCType1to4drives,connectingtoadatabase, queryingadatabaseandprocessingtheresults,updatingdatawithJDBC.*

Text Books :

1. *Java Fundamentals - A comprehensive Introduction, Herbet Schidt and DaleSrien,TMH.*

References Books:

1. *JavaforProgrammers,P.J.DeitelandH.M.Deitel,Pearsoneducation(OR) Java: How to Program P.J. Deitel and H.M. Deitel,PHI.*
2. *Object Orientd Programming through Java, P. Radha Krishna, Universities Press.*
3. *Thinking in Java, Bruce Eckel, Pearson Education.*
4. *Programming in Java, Bruce Eckel, PearsonEducation.*
5. *Programming in Java, S. Malhotra and S. Choudhary, Oxford Univ.Press.*

Course Outcomes :

1. *KnowledgeofthestructureandmodeloftheJavaprogramminglanguage.*
2. *UsetheJavaprogramminglanguageforvariousprogrammingtechnologies.*
3. *Develop software in the Java programminglanguage.*
4. *Evaluate user requirements for software functionality required to decide whethertheJavaprogramminglanguagecanmeetuserrequirements.*
5. *Propose the use of certain technologies by implementing them in the Java programming language to solve the givenproblem. and provide employability*

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J4513) OPERATING SYSYTEMS

B.Tech II YearII-Sem:CSE **L T P C3 0 03**

Course Objectives :

1. *To understand main components of OS and theirworking.*
2. *To study the operations performed by OS as a resourcemanager.*
3. *To understand the different scheduling policies ofOS.*
4. *To understand the different memory managementtechniques.*
5. *Tounderstandprocessconcurrency,synchronization,input/output,storage and filemanagement.*

UNIT-I :

Computer System and Operating System Overview: *Overview of computer operating systems, operating systems functions, protection and security. Distributed systems, special purpose systems, operating systems structures, systems calls and operating systems generation.* **Process Management:** *Process concepts, threads, scheduling-criteria algorithms, their evaluation, thread scheduling, case studies UNIX, Linux, Windows.*

UNIT-II :

Concurrency: *Process synchronization, the critical- section problem, Peterson's Solution, synchronization Hardware, semaphores, and classic problems of synchronization, monitors, Synchronization examples, and atomic transactions.CasestudiesUNIX,Linux,andWindows.* **MemoryManagement:** *Swapping, contiguous memory allocation, paging, structure of the page table, segmentation,virtualmemory,demandpaging,page-Replacement,algorithms, case studies UNIX, Linux,Windows.*

UNIT–III :

Principles of Deadlock: *System model, deadlock characterization, deadlock prevention, detection and avoidance, recovery form deadlock.* **File system Interface:** *The concept of a file, Access Methods, Directory structure,File system mounting, filesharing,protection.*

File System implementation: *File system structure, file system implementation, directory implementation, directory implementation, allocation methods, free-space management, efficiency and performance, case studies. UNIX, Linux, Windows.*

UNIT–IV :

Mass-Storage Structure: *Mass-storage structure overview of Mass-storage structure, Disk structure, disk attachment disk scheduling, swap-space management, RAID structure, stable-storage implementation, Tertiary storage structure.*

UNIT–V:

Protection: *Protection, Goals of Protection, Principles of Protection, Domain of protection Access Matrix, Implementation of Access Matrix, Access control, Revocation of Access Rights, Capability- Based systems,Language–Based Protection.*

Security- *The Security problem, program threats, system and network threats cryptography as a security tool, user authentication, implementing security defenses, firewalling to protect systems and networks, computer –security classifications, case studies UNIX, Linux, Windows.*

Text Books :

1. *Abraham Silberchatz, Peter B. Galvin "Operating System Concepts" Greg Gagne 7th Edition, JohnWiley,ISBN:-10:04->1694665.*
2. *Stallings, "Operating Systems – Internal and Design Principles", Fifth Edition–2005, Pearsoneducation/PHI,ISBN:0-13-147954-7.*

Reference Books :

1. *D.M.Dhamdhere "Operating systems- A Concept based Approach" 2ndEdition,TMH,ISBN:13:9780070611948.*
2. *Andrew S Tanenbaum "Modern Operating Systems" 2nd Edition, Pearson/ PHI,ISBN:-10:0132392275.*

Course outcomes :

1. *Understand the basics of operating systems like kernel, shell, types and views of operatingsystems.*
2. *Describe the various CPU scheduling algorithms and removedeadlocks.*
3. *Explainvariousmemorymanagementtechniquesandconceptofthrashing.*
4. *Use disk management and disk scheduling algorithms for better utilization of externalmemory.*
5. *Recognize file system interface, protection and securitymechanisms. Overall improve the employability*

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J4514) FORMAL LANGUAGES & AUTOMATA THEORY

B.Tech II YearII-SEM:CSE **L T P C3 0 03**

Course Objectives :

1. *To classifies machines by their power to recognizelanguages.*
2. *To employ finite state machines to solve problems incomputing.*
3. *To explain deterministic and non-deterministicmachines.*
4. *To identify the given language is regular ornot?*
5. *Tocomprehendthehierarchyofproblemsarisinginthecomputersciences.*

Syllabus :

UNIT-I :

Fundamentals : *Strings, Alphabet, Language, Operations, Finite state machine, definitions, finite automaton model, acceptance of strings, and languages, deterministic finite automaton and non deterministic finite automaton, transition diagrams and Language recognizers.*

UNIT-II :

Finite Automata: *NFA with Î transitions - Significance, acceptance of languages. Conversions and Equivalence: Equivalence between NFA with and withoutÎtransitions.NFAtoDFAconversion,minimizationofFSM,equivalence between two FSM's, Finite Automata with output- Moore and Melaymachines.*

Regular Languages: *Regular sets, regular expressions, identity rules, Constructing finite Automata for a given regular expressions, Conversion of FiniteAutomatatoRegularexpressions.Pumpinglemmaofregularsets,closure properties of regular sets (proofs notrequired).*

UNIT III :

GrammarFormalism:*Regulargrammars-rightlinearandleftlineargrammars, equivalencebetweenregularlineargrammarandFA,interconversion,Context free grammar, derivation trees, and sentential forms.Right most and leftmost derivation ofstrings.*

Context Free Grammars: *Ambiguity in context free grammars. Minimization of Context Free Grammars. Chomsky normal form, Greiback normal form, Pumping Lemma for Context Free Languages. Enumeration of properties of CFL (proofs omitted).*

UNIT IV :

Push down Automata: *Push down automata, definition, model, acceptance ofCFL,Acceptancebyfinalstateandacceptancebyemptystateandits* *equivalence. Equivalence of CFL and PDA, interconversion. (Proofs not required). Introduction to DCFL and DPDA.*

TuringMachine:*TuringMachine,definition,model,designofTM,Computable functions, recursively enumerable languages. Church's hypothesis, counter machine, types of Turing machines (proofs notrequired).*

UNIT V :

Computability Theory: *Chomsky hierarchy of languages, linear bounded automata and context sensitive language, LR (0) grammar, decidability of, problems, Universal Turing Machine, undecidability of posts. Correspondence problem, Turing reducibility, Definition of P and NP problems, NP complete and NP hardproblems.*

Text Books :

1. "IntroductiontoAutomataTheoryLanguagesandComputation".Hopcroft H.E. and Ullman J. D.Pearson Education

2. Introduction to Theory of Computation –Sipser 2nd editionThomson

Reference Books:

1. *Introduction to Computer Theory, Daniel I.A. Cohen, JohnWiley.*
2. *Introduction to languages and the Theory of Computation, John C Martin, TMH.*
3. *"Elements of Theory ofComputation.*

Course Outcomes :

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

1. *Definethebasickindsoffiniteautomataandtheircapabilities.*
2. *Design deterministic and non-deterministicmachines.*
3. *Apply the grammar and languages to design abstract computer machines and accomplish the Lemmas, Hypothesis for variouslanguages.*
4. *Design push-down automata and turingmachines.*
5. *Categorize languages into their types and model the logic and solutions todecidableandundecidableproblemsthroughcompatabilitytheory.increase employability.*

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J4515) JAVA PROGRAMMING LAB

B.Tech. II YearII-Sem:CSE **L T P C0 0 42**

Course Objectives :
This course will develop students' knowledge in/on.

1. *The concepts of javaprogramming.*
2. *Debug and test java applicationseffectively.*
3. *Effective use of exceptional handling, packages and interfaces in develop applications.*
4. *I/O and GUI programming injava*
5. *Java compiler and eclipseplatform.*

LIST OF EXPERIMENTS :

1. a)Writeajavaprogramthatprintsallrealsolutionstothequadraticequation ax2+bx+c =0. Read in a, b ,c and use the quadratic formula. If the discriminator b2 – 4ac is negative display a message stating that there are no realsolutions.

b)Writeajavaprogramthatusesbothrecursiveandnonrecursivefunctions to print the nth value in the Fibonaccisequence.

2. a) Write a java program that prompts the user for an integer and then prints out all prime numbers up to thatinteger.

b) Write a java program to multiply two given matrices.

3. a) Write a java program that checks whether a given string is a palindrome orNot.

Ex : MADAM is a palindrome.

b) Write a java program for sorting a given list of names in ascending order.

4. Write a Java program to create an abstract class named Shape that contains two integers and an empty method named printArea(). Provide three classes named Rectangle, Triangle and Circle such that each one oftheclassesextendstheclassShape.Eachoneoftheclassescontains onlythemethodprintArea()thatprintstheareaofthegivenshape.

5. Write a program forpackages.

6. *Write a Java program that implements a multi-thread application that has three threads. First thread generates random integer every 1second andifthevalueiseven,secondthreadcomputesthesquareofthenumber and prints. If the value is odd, the third thread will print the value of cube of thenumber.*

7. *Write a java program that correctly implements producer consumer problem using the concept of inter threadcommunication.*

8. *a) Develop an applet that displays a simplemessage.*

   b)Developanappletthatreceivesanintegerinonetextfield,andcomputers its factorial Value and returns it in another text field, when the button named "Compute" isclicked.

9. *WriteaJavaprogramthathandlesallmouseeventsandshowstheevent name at the center of the window when a mouse event is fired (Use Adapterclasses).*

10. *Write a java program that reads a line of integer, and then displays each integer, and the sum of all the integers(use string tokenizer class of java.util).*

11. *Writea Javaprogramthatworksasasimplecalculator.Useagridlayout to arrange buttons for the digits and for the +, -, *, % operations. Add a textfieldtodisplaytheresult.Handleanypossibleexceptionslikedivided byzero.*

12. *Write a Java program that creates a user interface to perform integer divisions.Theuserenterstwonumbersinthetextfields,Num1andNum2. The division of Num1 and Num2 is displayed in the Result field when the Dividebuttonisclicked.IfNum1orNum2werenotaninteger,theprogram wouldthrowaNumberFormatException.IfNum2wereZero,theprogram wouldthrowanArithmeticException.Displaytheexceptioninamessage dialogbox.*

13. *Write a Java program that simulates a traffic light. The program lets the user select one of three lights: red, yellow, or green with radio buttons. On selecting a button, an appropriate message with "Stop" or "Ready" or "Go" should appear above the buttons in selected color. Initially there is no messageshown.*

14. *Suppose that a table named Table.txt is stored in a text file. The first line in the file is the header, and the remaining lines correspond to rows in the table. The elements are separated by commas. Write a java program to display the table using Labels in GridLayout.*

15. *Implementtheaboveprogramwithdatabaseinsteadofatextfile.*
16. *Write a Java program that takes tab separated data (one record per line) from a text file and inserts them into adatabase.*
17. *Write a Java program that connects to a database using JDBC and does add, delete, modify and retrieveoperations.*
18. *Write a java program that prints the meta-data of a giventable.*

Text Book :

1. *Java Fundamentals - A comprehensive Introduction, Herbert Schildt and dale skrien, TMH.*

Reference Books :

1. *JavaforProgrammers,P.J.DeitelandH.M.Deitel,Pearsoneducation(OR) Java: How to Program P.J. Deitel and H.M. Deitel,PHI.*
2. *Object Orients Programming through Java, P. Radha Krishna, Universities Press.*
3. *Thinking in Java, Bruce Eckel, PearsonEducation.*
4. *Programming in Java, S. Malhotra and S. Choudhary, Oxford Univ.Press.*

Course Outcomes :

1. *Understandprogramminglanguage and skill full knowledge in programming concepts,particularlyJavaandobject- orientedconcepts.*
2. *Write, debug, and document well-structured Javaapplications.*
3. *Implement Java classes fromspecifications.*
4. *Create and use objects from predefined classlibraries.*
5. *Build I/O and GUI applications withJava.*

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J4516) OPERATING SYSYTEMS LAB

B.Tech II YearII-Sem:CSE **L T P C0**
0 31.5

Course Objectives :

1. *To Know LINUX environment and basic OScommands.*
2. *To use LINUX operating system for study of operating systemconcepts.*
3. *To write the code to implement and modify various concepts in operating systems usingLinux.*
4. *To implement different CPU scheduling algorithms, page replacement algorithms and dead lock avoidancealgorithm.*
5. *To learn different types of file organizationtechniques.*

LIST OF EXPERIMENTS :

1. *Simulate the following CPU schedulingalgorithms*
   a. *RoundRobin*
   b. *SJF*
   c. *FCFS*
   d. *Priority*
2. *Simulate all file allocationstrategies*
   a. *Sequential*
   b. *Indexed*
   c. *Linked*
3. *Simulate MVT andMFT*
4. *Simulate all File OrganizationTechniques*
   a. *Single leveldirectory*
   b. *Twolevel*
   c. *Hierarchical*
   d. *DAG*
5. *Simulate Bankers Algorithm for Dead Lock Avoidance*
6. *Simulate Bankers Algorithm for Dead Lock Prevention*
7. *Simulate all page replacementalgorithms*
   a. *FIF*
   b. *LRU*
   c. *LFUetc.*
8. *Simulate Paging technique of memorymanagement.*

Text Books :

1. *Abraham Silberchatz, Peter B. Galvin "Operating System Concepts" Greg Gagne 7th Edition, JohnWiley,ISBN:-10:04->1694665.*
2. *Stallings, "Operating Systems – Internal and Design Principles", Fifth Edition–2005, Pearsoneducation/PHI,ISBN:0-13-147954-7.*

Reference Books :

1. *D.M.Dhamdhere "Operating systems- A Concept based Approach" 2ndEdition, TMH, ISBN:13:9780070611948.*
2. *Andrew S Tanenbaum "Modern Operating Systems" 2nd Edition, Pearson/ PHI,ISBN:-10:0132392275.*

Course Outcomes :

1. *Upon completing the course the student is capable of explaining the basic structure and functioning of operatingsystem.*
2. *Student is able to point the problems related to process management and synchronization as well as is able to apply learned methods to solve basic problems.*
3. *Student is capable of explaining the cause and effect related to deadlocks andisabletoanalyzethemrelatedtocommoncircumstancesinoperating systems.*
4. *The student is able to explain and improve the skills in basics of memorymanagement.*
5. *Studentisabletoknowthestructureofthemostcommonfile-systems.*

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

GENDER SENSITIZATION (JMC02)

B.Tech. II Year:AllBranches **L T P C2**
0 00

Course Objectives :

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

UNIT – I UNDERSTANDING GENDER :
Gender: Why Should We Study It? (Towards a World of Equals: Unit -1) Socialization: Making Women, Making Men (Towards a World of Equals: Unit -2) Introduction. Preparing for Womanhood. Growing up Male. First lessons in Caste. Different Masculinities.

UNIT – II GENDER AND BIOLOGY Missing Women:
Sex Selection and Its Consequences (Towards a World of Equals: Unit-4) Declining Sex Ratio. Demographic Consequences. Gender Spectrum: Beyond the Binary (Towards a World of Equals: Unit -10) Two or Many? Struggles with Discrimination.

UNIT – III GENDER AND LABOUR Housework:
the Invisible Labour (Towards a World of Equals: Unit -3) "My Mother doesn't Work." "Share the Load." Women's Work: Its Politics and Economics (Towards a World of Equals: Unit -7) Fact and Fiction. Unrecognized and Unaccounted work. Additional Reading: Wages and Conditions of Work.

UNIT – IV ISSUES OF VIOLENCE Sexual Harassment:
Say No! (Towards a World of Equals: Unit -6) Sexual Harassment, not Eve-teasing- Coping with Everyday Harassment- Further Reading: "Chupulu". DomesticViolence:SpeakingOut(TowardsaWorldofEquals:Unit-8)IsHome aSafePlace?-WhenWomenUnite[Film].RebuildingLives.AdditionalReading: New Forums for Justice. Thinking about Sexual Violence (Towards a World of Equals:Unit-11)BlamingtheVictim-"IFoughtformyLife…."–AdditionalReading: The Caste Face ofViolence.

UNIT – V GENDER : CO – EXISTENCE Just Relationships:

Being Together as Equals (Towards a World of Equals: Unit -12) Mary Kom and Onler. Love and Acid just do not Mix. Love Letters. Mothers and Fathers. Additional Reading: Rosa Parks-The Brave Heart.

Prescribed Textbook *: All the five Units in the Textbook, "Towards a World of Equals: A Bilingual Textbook on Gender" written by A.Suneetha, Uma Bhrugubanda, Duggirala Vasanta, Rama Melkote, Vasudha Nagaraj, Asma Rasheed, Gogu Shyamala, Deepa Sreenivas and Susie Tharu and published by Telugu Akademi, Hyderabad,Telangana State in the year 2015.*

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

REFERENCE BOOKS :

- *Menon, Nivedita. Seeing like a Feminist. New Delhi: Zubaan-Penguin Books,2012.*
- *Abdulali Sohaila. "I Fought For My Life…and Won."Available onlineat:*
- *http://www.thealternative.in/lifestyle/i-fought-for-my-lifeand-won-sohaila-abdulal/.*

Course Outcomes :

- *Students will have developed a better understanding of important issues related to gender in contemporaryIndia.*
- *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 andfilm.*
- *Students will attain a finer grasp of how gender discrimination works in our society and how to counterit.*
- *Students will acquire insight into the gendered division of labour and its relation to politics andeconomics.*
- *Men and women students and professionals will be better equipped to work and live together asequals.*
- *Students will develop a sense of appreciation of women in all walks oflife.*
- *Through providing accounts of studies and movements as well as the new lawsthatprovideprotectionandrelieftowomen,thetextbookwillempower students to improve skills to understand and respond to genderviolence.*

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J5518) DATABASE MANAGEMENT SYSTEMS

B.Tech. III YearI-SEMCSE **L T P C3 0 03**

Course Objectives :

This Course provides an emphasis on

1. *Howtoorganize,maintainandretrieveinformationefficientlyandeffectively from aDatabase.*
2. *Itpresentsanintroductiontodatabasemanagementsystems(DBMS)and relational datamodel.*
3. *Understanding the different issues involved in the design of a database system.*
4. *Identifyingfunctionaldependenciestonormalizetherelationsofdatabase.*
5. *Also the course introduces the concepts of transactions and transaction processing and the issues and techniques relating to concurrency and recovery in multi-user databaseenvironments.*

Syllabus :

UNIT-I :

Database System Applications, database System VS file System, View of Data – Data Abstraction –Instances and Schemas – Data Models, Database Languages, Database Architecture, Database Users and Administrators. Database design, ER diagrams, Beyond ER Design, Entities, Attributes and Entity sets, Relationships and Relationship sets, Additional features of ER Model, Conceptual Design with the ERModel.

UNIT-II :

Introduction to the Relational Model – Integrity Constraints over Relations, Enforcing Integrity constraints, Querying relational data, Logical data base Design,IntroductiontoViews–Destroying/alteringTablesandViews.Relational Algebra–SelectionandProjection,SetOperations,Renaming,Joins,Division, Examples of Algebra Queries, Relational calculus – Tuple relationalCalculus – Domainrelationalcalculus–ExpressivePowerofAlgebraandcalculus.

UNIT-III :

Form of Basic SQL Query – Examples of Basic SQL Queries, Introduction to Nested Queries, Correlated Nested Queries, Set – Comparison Operators – Aggregate Operators, NULL values – Comparison using Null values – Logical connectives – AND, OR and NOT – Impact on SQL Constructs, Outer Joins, Disallowing NULL values, Complex Integrity Constraints in SQL Triggers and

Active Data bases.Schema refinement – Problems Caused by redundancy, Decomposition – Problem related to decomposition - Reasoning about FDS - FIRST, SECOND, THIRD Normal forms – BCNF –Schema Refinement inData baseDesign–MultivaluedDependencies–FOURTHNormalForm.

UNIT–IV :

Transaction Concept- Transaction State- Implementation of Atomicity and Durability – Concurrent – Executions – Serializability- Recoverability – Implementation of Isolation. Lock –Based Protocols – Timestamp Based Protocols-Validation-BasedProtocols.RecoveryandAtomicity–Log–Based Recovery – Recovery with Concurrent Transactions – Buffer Management – Failure with loss of nonvolatile storage-Advance Recovery systems- Remote Backupsystems.

UNIT–V :

DataonExternalStorage,FileOrganizationandIndexing–ClusteredIndexes, PrimaryandSecondaryIndexes,IndexdataStructures–HashBasedIndexing – Tree base Indexing, Comparison of File Organizations. Intuitions for tree Indexes, Indexed Sequential Access Methods (ISAM) B+ Trees: A Dynamic IndexStructure.

Text Books :

1. *Raghurama Krishnan, Johannes Gehrke " Data base Management Systems" TATA McGraw-Hill 3rdEdition.*
2. *Silberschatz, Korth "Data base System Concepts" McGraw hill, VEdition.*

Reference Books :

1. *PeterRobandCarlosCoronel"DatabaseSystemsdesign,Implementation, and Management" 7thEdition.*
2. *ElmasriNavrate"FundamentalsofDatabaseSystems"PearsonEducation.*

Course outcomes :

1: Differentiate database systems from file system by understanding the featuresofdatabasesystemanddesignaERmodelforadatabasesystem.

2: Develop solutions to a broad range of query and data update problems using relational algebra, relational calculus and SQL.

3: Apply the normalization theory in relational databases for removing anomalies.

4: Analyze the basic issues of transaction processing, concurrency control, deadlock and its recovery schemes.

5: Compare database storage and access techniques for file organization, indexing methods and Query Processing. career training to improve self-esteem and increase employability

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J5519) PRINCIPLES OF PROGRAMMING LAANGUAGES

B.Tech. III Year ISem:CSE **L T P C2 1 03**

Course Objectives :

1. *To introduces the major programming paradigms, and the principles and techniquesinvolvedindesignandimplementationofmodernprogramming languages.*
2. *To introduce notations to describe syntax and semantics of programming languages.*
3. *To analyze and explain behavior of simple programs in imperative languages using concepts such as binding, scope, control structures, subprograms and parameter passingmechanisms.*
4. *To introduce the concepts of ADT and object oriented programming for large scale softwaredevelopment.*
5. *To introduce the concepts of concurrency control and exceptionhandling.*

Syllabus :

UNIT – I

The Role of programming Languages: *Towards Higher-level Languages, Programming Paradigms, Criteria for good language design and Language implementation.*

Language Description: *Expression notation, Abstract syntax tree, Context freeGrammars.*

UNIT – II

Structured Programming: *Need for Structured programming, Design considerations, handling special cases in loops, Programming with invariants, Control flow in C.*

Types – *Role of Types, Basic Types, Arrays, Records, Unions, Sets, Pointers, Types and Error Checking.*

Procedure Invocation: *Introduction to Procedures, parameter passingmethods, Scope Rules for Names, Nested Scopes, and Activation Records.*

UNIT – III

Object-Oriented Programming –*Object*, *Object –oriented thinking, Classes in C++ - Over loading, Derived classes, Information hiding, Inheritance and polymorphism, Generic functions, Objects inSmalltalk.*

Concurrent Programming – *Parallelism in Hardware, Liveness properties, Synchronization, Concurrency in Ada.*

UNIT – IV

Functional Programming - *Introduction to LISP, Exploring a List, Functions asFirst-classvalues,ML:types,function,Listmanipulation,ExceptionHandling in ML, Storage allocation forlists.*

UNIT – V

Logic Programming - *Computing with relations, Introduction to Prolog, Data structures in Prolog, Programming techniques, Control in Prolog, Cuts.*

Text Books :

1. *Ravi Sethi, "Programming Languages", II Ed., Pearson Education asia , 2001.*
2. *Winston, LISP,2nd edition, Pearson Education asia , 2001.*

Reference Books :

1. *Robert W. Sebesta, "Concepts of Programming languages", 7th Edition. Pearson Education,2010.*
2. *Daniel P. Friedman, Mitchell Wand, "Essentials of Programming Languages", 3rd edition PHI,2009.*
3. *KennethC.Louden"ProgrammingLanguagesprinciplesandPractice",2nd Edition, Cengage Learning2003.*

Course Outcomes :

1. *Master using syntax related concepts including context free grammars, parsetrees,recursivedescentparsing,printing,andinterpretation.*
2. *Master analyzing semantic issues associated with function implementations, including variable binding, scoping rules, parameter passing, and exceptionhandling.*
3. *Masterimplementationtechniquesforinterpretedfunctionallanguages.*
4. *Be familiar with design issues of object oriented and functionallanguages.*

Be familiar with language abstraction constructs of classes, interfaces, packages, andprocedures. career training to improve self-esteem and increase employability

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(AJ5454) MICRO PROCESSORS AND INTERFACING

B.Tech.-III Yr ISem.:CSE **L T P C3 0 03**

COURSE OBJECTIVES *:*

1. *Understanding the importance of microprocessors.*
2. *Understanding the application development skills by using various instructions.*
3. *Understanding the interfacing of devices withprocessors.*
4. *Understanding the interfacing of memory and data transferoperations.*
5. *Understanding the advanced microprocessors.*

UNIT-I :

8085 Overview: *Introduction, Functional Diagram, Instruction Set*

8086 Architecture: *8086 Architecture-Functional diagram, Register Organization,MemorySegmentation,ProgrammingModel,Memoryaddresses, Physical Memory Organization, Architecture of 8086, Signal descriptions of 8086, interrupts of8086.*

UNIT-II :

Instruction Set and Assembly Language Programming of 8086*:Instruction formats, Addressing modes, Instruction Set, Assembler Directives, Macros, and Simple Programs involving Logical, Branch and Call Instructions, Sorting, StringManipulations.*

UNIT -III :

Memory Interfacing to 8086:*Pin diagram of 8086-Minimum mode and maximum mode of operation. Timing diagram. Memory interfacing to 8086 (Static RAM & EPROM).*

IOInterfacing:*8255PPI–variousmodesofoperationandinterfacingto8086. Interfacing Keyboard, Displays, 8279 Stepper Motor and actuators.D/A and A/D converterinterfacing*

UNIT –IV :

DMAInterfacing*:NeedforDMA,DMAControllersarchitecture,PinDescription.*

Serial Communication and Bus Interface: *Serial data transfer schemes, Asynchronous and Synchronous data transfer schemes, 8251 USART architecture and interfacing. TTL to RS 232C and RS232C to TTL conversion. Sample program of serial data transfer. Introduction to High-speed serial communications standards, USB. IEEE-488, Prototyping &Troubleshooting.*

UNIT –V :

Advanced Micro Processors: *Advanced Micro Processors - Introduction to 80286, Salient Features of 80386, Real and Protected Mode Segmentation & Paging, Salient Features of Pentium, Branch Prediction, Overview of RISC Processors.*

8051 Micro Controller Architechture: *8051 Microcontroller Architecture, Register set of 8051, Modes of timer operation, Serial port operation, Interrupt structure of 8051, Memory and I/O interfacing of 8051.*

TEXT BOOKS :

1. *MicroProcessorArchitectureProgrammingandApplicationswiththe8085-Ramesh Goankar, 5th Edition,Penram InternationalPublishing.*
2. *Advanced Microprocessors and Peripherals – A. K. Ray and K.M. Bhurchandani, TMH, 2nd Edition2006.*
3. *The 8051 Microcontroller, Kenneth. J. Ayala, Cengage Learning,3rd Ed.*

REFERENCE BOOKS :

1. *Microprocessors and Interfacing, D. V. Hall, TMGH, 2nd Edition2006.*
2. *The8051Microcontrollers,ArchitectureandProgrammingandApplications -K.Uma Rao, Andhe Pallavi, Pearson, 2009.*

Course Outcomes :

- *Understands the internal architecture and organization of 8085 and 8086 and 8051processors/controllers.*
- *Understandstheinterfacingtechniquesto8086and8051andcandevelop assembly language programming to design microprocessor/ micro controller basedsystems. And improves employability skills*

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J5520) WEB PROGRAMMING

III Year B. Tech. ISemCSE **L T P C3**
0 03

Course Objectives :
This course will develop students' knowledge in/on.

1. *Designing the static web page using HTML Tags, CSS properities, javascript.*
2. *Demonstrate JDBC connections, XML Schema withservlets.*
3. *Designing a web page in JSP with differentdatabases.*
4. *Understanding the basics ofPHP.*
5. *Accessing the data from the database using MySQL and different types of databases.*

Syllabus :

UNIT-I *:*

Introduction to HTML: *Basic Tags, List, Linking document, Creating table and its attributes, Images, Frames, Forms, CSS (cascading style sheet) rules andproperties.*

Introduction to JavaScript: *JavaScript syntax, Datatype, Variable, Array, Operator and expression, Looping, Function, Dialog box, Events and events handling.*

UNIT-II :

JDBC:*IntroductiontoJDBC,TypesofJDBCdrivers,Differentstatementobjects statement, Prepared statement, Callable statement, Batchupdates.*

Introduction to XML*: Structuring of data, XML namespaces, Document type definitions (DTD's), W3C XML schema documents, XML vocabularies, Extensible style sheet language and XSL transformations, Document object model (DOM).*

Servlets:*Thejavax.servlet.httppackage,Handlinghttprequestandresponses, Cookies session tracking, Securityissues.*

UNIT-III *:*

Introduction to JSP: *JSP and HTTP, JSP engines, How JSP works, JSP and servlet, Anatomy of a JSP page, JSP syntax, JSP components, Session tracking, Database connectivity, JDBC drivers, SQL statement***.**

UNIT-IV *:*

IntroductiontoPHP:*OverviewofPHP,Generalservercharacteristics,Starting to script on server side, Syntax, Variables, Strings, Operators, if else, Loop, switch,array,function,Session,Exception,Formhandling,ServerstorunPHP.*

UNIT-V

DatabaseswithPHP:*WorkingwithMySQLdatabase,Operationsofdatabase using queries; Accessing MySQL database with PHP - How web database architectures work, Querying a database from the web, Checking and filtering input data, Setting up a connection, Choosing a database to use, Querying the database, Retrieving the query results, Disconnecting from the database, Putting new information in the database, Using prepared statements, Using other PHP databaseinterfaces.*

Text Books :

1. *Kogent, "Web Technologies HTML, CSS, JavaScript, ASP.NET, Servlets, JSP, PHP, ADO.NET, JDBC and XML", 1st Edition, Dreamtech Press (Black Book), ISBN-13:9789351192510,2013.*
2. *Phil Hanna, "JSP: The Complete Reference", 2nd Edition, McGraw-Hill, ISBN: 007-212768-6, 2001, (Chapters4,5,6,7,12,13,14,16).*

Reference Books :

1. *Ivan Bayross, "Web Enabled Commercial Application Development Using HTML, JavaScript, DHTML and PHP", 4th Edition, BPB Publications,ISBN-13: 978-8183330084,2009.*
2. *Uttam K.Roy, "Web Technologies", 7th Edition, Oxford Higher Education, ISBN-10: 0-19-806622-8, ISBN-13: 978-0-19-806622-4,2010.*
3. *Luke Welling, Laura Thomson,"PHP and MySQL Web Development", 3rdEdition, Sams Publications, ISBN: 0-672-32672-8,2005.*
4. *JaysonFalkner,KevinJones,"ServletsandJavaServerPages",1stEdition, Pearson, ISBN: 0-321-13649-7,2003.*

Course Outcomes :

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

1. *Design a static web page using HTML Tags, CSS properities,javascripts.*
2. *Design and develop a dynamic web page using JDBC, XML schema, servlets.*
3. *Design and develop a web page to access data from the databases using JSPconcepts.*
4. *Design and demonstrate on secured web page with PHPscripting.Design architecture for accessing MySQL database withPHP.career training to improve self-esteem and increase employability*

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J5521) ARTIFICIAL INTELLIGENCE
(Professional Elective –I)

III Year B. Tech. ISem:CSE **L T P C3 0 03**

Course Objectives :

1. *To list the significance ofAI.*
2. *To discuss the various components that are involved in solving an AI problem.*
3. *To analyze the various knowledge representation schemes, Reasoning and Learning techniques ofAI.*
4. *Apply the AI concepts to build an expert system to solve the real world problems.*
5. *To gain knowledge on Natural languageProcessing.*

Syllabus :

UNIT I *:*

Introduction&ProblemSolving:*AIproblems,AITechnique,Definingproblem as a State- Space Search, Production Systems, Problem Characteristics, Production SystemCharacteristics.*

Heuristic Search Techniques: *Generate – and – test, Hill Climbing, Best – First Search, Problem Reduction, Constraint Satisfaction, and Means-ends Analysis.*

UNIT II :

Game Playing: O*verview, Min-Max search Procedure, Adding Alpha-beta Cutoffs, Additional Refinements, Iterative Deepening.*

Knowledge Representation Issues*: Approaches, Issues, Frame Problem,*

Using Predicate Logic: *Representing simple facts in logic, Representing Instance and ISA Relationships, Computable Functions and predicates, Resolution, Natural Deduction.*

UNIT III *:*

Uncertainty and Reasoning Techniques: *Non monotonic reasoning, Logics for Non monotonic reasoning, Implementation issues, Augmenting a problem solver, implementation of Depth First Search and Breadth first search.*
Statistical reasoning: *Probability and Bayes theorem, Certainty factors and Rule-based systems, Bayesian Networks, Dempster-Shafer Theory.*

UNIT IV *:*

Learning:*WhatisLearning,Rotelearning,Learningbytakingadvice,Learning in problem solving, learning from examples: Induction, Learning by Decision trees.*

Expert System: *Representing and Using Domain Knowledge, Expert systems shells, Explanation, Knowledge Acquisition.*

UNIT V *:*

Perception and Action*: Real Time Search, Vision, Speech Recognition, ACTION: Navigation, Manipulation, Robot architectures.*

Natural Language Processing: *Introduction, Syntactic Processing, Semantic Analysis, Statistical NLP, Spell Checking.*

Text Books :

1. *Elaine Rich, Kevin Night, Shivashankar B Nair, "Artificial Intelligence",3rd Edition.,2008.*
2. *RussellNorvig,"ArtificialIntelligence-ModernApproach",3rdedition,2009.*

Reference Books *:*

1. *Saroj Kaushik, "Artificial Intelligence", Cengage Learning India,2012.*
2. *Nelson M. Mattos , "An Approach to Knowledge Base Management", Springer Berlin Heidelberg,1991.*

Course Outcomes *:*

After completion of the course, student should be able to:

1. *Differentiate between a rudimentary Problem and an AI problem, it's Characteristics and problem solvingTechniques.*
2. *Determine and evaluate the various searchstrategies.*
3. *Compare and contrast the various "knowledge representation" schemes ofAI.*
4. *Understand and analyze the various reasoning techniques involved in solving AIproblems.*
5. *Understand the different learning techniques,apply the AI techniques to solve the real worldproblems.*

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J5522) ADHOC SENSOR NETWORKS

(Professional Elective –I)

III Year B. Tech. ISem:CSE **L T P C3**
0 03

Course Objectives :

1. *Toimpartknowledgeofadhocnetworks,designandimplementationissues, and availablesolutions.*
2. *To impart knowledge of routing mechanisms and the three classes of approaches: proactive, on-demand, andhybrid.*
3. *To provide knowledge of sensor networks and theircharacteristics.*
4. *Study the Applications of SensorNetworks.*
5. *To learn deployment of ad-hoc/sensornetwork.*

Syllabus :

UNIT I :
IntroductiontoAd-Hocnetworks,WirelessLANs,WirelessPANs,WirelessMesh Networks, Topology Control in Wireless Ad Hoc Networks, Broadcasting and Activity Scheduling in Ad Hoc Networks, Location Discovery, Mobile Ad Hoc Networks (MANETs): Routing Technology for Dynamic Wireless Networking, Congestion Control in ad hoc wirelessnetworks.

UNIT II *:*
Introduction, Routing in Ad Hoc Networks, Broadcasting, Multicasting and Geocasting,MobileAd-HocNetworkingwithaViewof4GWireless:Imperatives and Challenges, Off-the-Shelf Enables of Ad Hoc Networks, IEEE 802.11 in Ad Hoc Networks: Protocols, Performance and OpenIssues.

UNIT III :
Media Access Control (MAC) Protocols: Issues in designing MAC protocols, Classifications of MAC protocols, MAC protocols, Cognitive Radio and Networks, TCP over Ad Hoc Networks, Energy-Efficient Communication in Ad Hoc Wireless Networks, Ad Hoc Networks Security, Self-Organized and Cooperative Ad Hoc Networking, Security in Ad Hoc and Sensor Networks.

UNIT IV *:*
IntroductiontoSensornetworks,IntroductionandOverviewofWirelessSensor Networks: Applications of Wireless Sensor Networks, Examples of Category 1 WSN Applications, Basic Wireless Sensor Technology: Sensor Node Technology, Sensor Taxonomy, WSN Operating Environment, WSNTrends.

UNIT V *:*

Sensor Networks Design Considerations, Sensor Networks in Controlled Environment, Wireless Transmission Technology and Systems: Radio Technology Primer, Available Wireless Technologies. Medium Access Control ProtocolsforWirelessSensorNetworks:FundamentalsofMACProtocols,MAC Protocols for WSNs, Sensor-MAC Case Study, IEEE 802.15.4 LR-WPANs Standard Case Study. Integrating MANETs, WLANs and Cellular Networks, Networking Sensors: Unique features, Deployment of ad-hoc/sensor network, Sensortaskingandcontrol,Transportlayerandsecurityprotocols,Applications of SensorNetworks.

Text Books :

1. *Carlos de Morais Cordeiro and Dharma Prakash Agrawal, "Ad Hoc and Sensor Networks : Theory and Applications", Second Edition, World Scientific Publishers,2011.*
2. *Prasant Mohapatra and Sriramamurty, "Ad Hoc Networks: Technologies and Protocols", Springer International Edition,2009.*
3. *Kazem Sohraby, Daniel Minoli, Taieb Znati, "Wireless Sensor Networks', A John Wiley & Sons Inc. Publication,2007.*

Reference Books :

1. *C. Siva Ram Murthy & B. S. Manoj, "Ad hoc Wireless, Networks – Architecture and Protocols", Prentice Hall,2004.*
2. *Jagannathan Sarangapani, Wireless Ad hoc and Sensor Networks: Protocols, Performance, and Control, CRC Press,2007.*

Course Outcomes :

After completion of the course, student should be able to:

1. *Describe the unique issues in ad-hoc/sensornetworks.*
2. *Understand current technology trends for the implementation and deployment of wireless ad-hoc/sensornetworks.*
3. *Explain the challenges in designing MAC, routing and transport protocols for wireless ad-hoc sensornetworks.*
4. *Gain knowledge and employability on implementation of protocols on a sensor test bed network.*
5. *Explain the principles of mobile ad hoc networks (MANETs) and wireless sensor networks(WSNs).*

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J5523) GRAPH THEORY
(Professional Elective –I)

III Year B. Tech. ISem:CSE **L T P C3 0 03**

Course Objectives :

1. To understand and apply the fundamental concepts in graphtheory.

2. To apply graph theory based tools in solving practicalproblems.

3. To improve the proof writingskills.

4. To understand fundamentals of graphtheory.

5. To explore modern applications of graphtheory.

Syllabus :

UNIT-I :

Introduction: *Graphs – Introduction – Isomorphism – Sub graphs – Walks, Paths, Circuits – Connectedness – Components – Euler Graphs –Hamiltonian Paths and Circuits – Trees – Properties of trees – Distance and Centers in Tree – Rooted and BinaryTrees.*

UNIT II *:*

Trees, Connectivity, Planarity:*Spanning trees – Fundamental Circuits – Spanning Trees in a Weighted Graph – Cut Sets – Properties of Cut Set – All Cut Sets – Fundamental Circuits and Cut Sets –Connectivity and Separability – Network flows – 1-Isomorphism – 2-Isomorphism –Combinational and Geometric Graphs – Planer Graphs – Different Representation of a Planer Graph.*

UNIT III :

Matrices, Colouring And Directed Graph:*Incidence matrix – Submatrices – CircuitMatrix–PathMatrix–AdjacencyMatrix–ChromaticNumber–Chromatic partitioning–Chromaticpolynomial–Matching–Covering–FourColorProblem – DirectedGraphs–TypesofDirectedGraphs–DigraphsandBinaryRelations – Directed Paths and Connectedness – Euler Graphs –Adjacency Matrix of a Digraph.*

UNIT IV :

Algorithms: *Connectedness and Components – Spanning tree – Finding all Spanning Trees of a Graph – Set of Fundamental Circuits – Cut Vertices and Separability – Directed Circuits.*

UNIT V *:*

Algorithms: *Shortest Path Algorithm – DFS – Planarity Testing – Isomorphism.*

Text Books :

1. *Narsingh Deo, "Graph Theory: With Application to Engineering and Computer Science", Prentice Hall of India, 2003.*

Reference Books :

1. *R.J. Wilson, "Introduction to Graph Theory", Fourth Edition, Pearson Education2003.*

Course outcomes:

1. *The students will be able to apply principles and concepts of graph theory in practicalsituations.*
2. *Solve problems using basic graphtheory.*
3. *Identify induced subgraphs, cliques, matchings, coversingraphs.*
4. *Determine whether graphs are Hamiltonian and/orEulerian.*
5. *Solve problems involving vertex and edge connectivity, planarityand crossingnumbers,Solveproblemsinvolvingvertexandedgecoloring,Model real world problems using graphtheory.*

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(AJ5455) MICRO PROCESSORS AND INTEFACING LAB

B.Tech.-III Yr ISem:CSE **L TP C0**
0 21

Using 8086 Processor & 8051 Microcontroller Kits
List of Experiments *:*

1. *WriteandexecuteanAssemblylanguageProgram(ALP)to8086processor to add, subtract andmultiplication.*
2. *WriteandexecuteanAssemblylanguageProgram(ALP)to8086processor to divide a 32 bit unsignedNumber.*
3. *WriteandexecuteanAssemblylanguageProgram(ALP)to8086processor to sort the given array ofNumbers.*
4. *WriteandexecuteanAssemblylanguageProgram(ALP)to8086processor toBitlevelLogicalOperations,Rotate,Shift,SwapandBranchOperations.*
5. *WriteandexecuteanAssemblylanguageProgram(ALP)to8086processor to pick the median from the givenString.*
6. *WriteandexecuteanAssemblylanguageProgram(ALP)to8086processor to find the length of a givenstring.*
7. *WriteandexecuteanAssemblylanguageProgram(ALP)to8086processor to reverse the givenstring.*
8. *WriteandexecuteanAssemblylanguageProgram(ALP)to8086processor to verify thepassword.*
9. *WriteandexecuteanAssemblylanguageProgram(ALP)to8086processor to insert or delete acharacter?*
10. *WriteandexecuteanAssemblylanguageProgram(ALP)to8086processor tocalladelaysubroutineanddisplaythecharacterontheLEDdisplay.*
11. *Interface a keypad to 8086 microprocessor and display the key number pressedonthe7-segmentdisplaywhichisalsointerfacedto8086.*
12. *Write an interrupt service routine to 8086 whenever there is an interrupt request on interrupt pin, which displays “hello” on aLCD.*
13. *Interface an 8086 microprocessor trainer kit to PC and establish a communication between them through RS232.*
14. *Interface DMA controller to 8086 and transfer bulk data from memory to I/ Odevice.*
15. *Interface a stepper motor to 8086 and operate it in clockwise and anti-clock wise by choosing variablestep-size.*

16. *Interface an 8 bit ADC to 8086 and generate digital output and store it in memoryforthegivensquare/ramp/trianglewaveforminputs.*
17. *Interface an ADC to 8086 and generate step, ramp, triangle and square waveforms with differentperiods.*
18. *Time delay Generation Using Timers of8051.*
19. *Serial Communication from / to 8051 to / from I/Odevices.*
20. *Program Using Interrupts to Generate Square Wave 10 KHZ Frequency on P2.1 Using Timer0 8051 in 8bit Auto reload Mode and Connect a 1HZ Pulse to INT1 pin and Display on Port0.Assume Crystal Frequency as 11.0592MHZ.*

BOOKS :

1. *Advanced Microprocessors And Peripherals by A K Ray, Tata McGraw-Hill Education, 2006. The 8051* **Microcontrollers***: Architecture, Programming & Applications by Dr. K. Uma Rao.*

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J5525) DATABASE MANAGEMENT SYSTEMSLABORATORY

B.Tech III YearI-SEM:CSE **L T P C0 0 42**

Course Objectives :

This lab enables the students

1. *To practice the concepts learnt in the subject DBMS by developing a database for an example company named "Roadway Travels" whose description is asfollows.*
2. *Thestudentisexpectedtopracticethedesigning,developingandquerying adatabaseinthecontextofexampledatabase"Roadwaytravels".Students are expected to use "Mysql"database.*
3. *To create a database and query it using SQL, design forms and generate reports.*
4. *Understand the significance of integrity constraints, referential integrity constraints, triggers,assertions.*
5. *Improve the database design bynormalization.*

LIST OF EXPERIMENTS :

Roadway Travels

"Roadway Travels" is in business since 1997 with several buses connecting different places in India. Its main office is located in Hyderabad. The company wants to computerize its operations in the following areas:

- *Reservations andTicketing.*
- *Cancellations.*

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

The above process involves many steps like

1. *AnalyzingtheproblemandidentifyingtheEntitiesandRelationships*
2. *E-RModel*
3. *RelationalModel*

4. *Normalization*
5. *Creating thedatabase*
6. *Querying.*

Students are supposed to work on these steps week wise and finally create a complete"DatabaseSystem"toRoadwayTravels.Examplesaregivenatevery experiment for guidance tostudents.

WEEK 1: E-R Model

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

Example: Entities :

1. *BUS*
2. *Ticket*
3. *Passenger*

Relationships :

1. *Reservation*
2. *Cancellation*

PRIMARY KEY ATTRIBUTES:

1. *Ticket ID (TicketEntity)*
2. *Passport ID (PassengerEntity)*
3. *Bus_NO (BusEntity)*

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

Note: The student is required to submit a document by writing the Entities and Keys to the lab teacher.

WEEK 2: Concept design with E-R Model

Relatetheentitiesappropriately.Applycardinalitiesforeachrelationship.Identify strong entities and weak entities (if any). Indicate the type of relationships (total / partial). Try to incorporate generalization, aggregation, specialization etc whereverrequired.

Note:ThestudentisrequiredtosubmitadocumentbydrawingtheE-RDiagram to the labteacher.

WEEK 3: Relational Model

Representallentities(Strong,Weak)intabularfashion.Representrelationships in a tabular fashion. There are different ways of representing relationships as tables based on the cardinality. Represent attributes as columns in tables or as tables based on the requirement. Different types of Attributes (Composite, Multi-valued, and Derived) have different way of representation. Example:The *passengertableslookasbelow.Thisisanexample.Youcanaddmoreattributes based on E-R model. This is not a normalizedtable.*

Passenger

Name	Age	Sex	Address	Ticket_id	Passport ID

Note :

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

WEEK 4: Normalization

Database normalization is a technique for designing relational database tables to minimize duplication of information and, in so doing, to safeguard the database against certain types of logical or structural problems, namely data anomalies.Forexample,whenmultipleinstancesofagivenpieceofinformation occur in a table, the possibility exists that these instances will not be kept consistent when the data within the table is updated, leading to a loss of data integrity.Atablethatissufficientlynormalizedislessvulnerabletoproblemsof thiskind,becauseitsstructurereflectsthebasicassumptionsforwhenmultiple instances of the same information should be represented by a single instance only.For the above table in the First normalization we can remove the multi valued attribute Ticket_id and place it in another table along with the primary key ofpassenger.

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

Passenger

Name	Age	Sex	Address	Ticket_id	Passport ID

You can do the second and third normal forms if re wired. Any ht) given Normalized tables are at the end.*

WEEK 5: installation of Mysql and practicing DDL commands

Installation of MySql. In this week you will learn Creating databases, How to createtables,alteringthedatabase,droppingtablesanddatabasesifnot *required. You will also try truncate, rename commands etc.Example for creation of a normalized "Passenger" table.*

CREATE TABLE Passenger (Passport_id INTEGER PRIMARY KEY, Name VARCHAR (50) Not NULL, Age Integer Not NULL, Sex Char, Address VARCHAR (50) Not NULL);

Similarly create all other tables.

Note: Detailed creation of tables is given at the end.

WEEK 6: Practicing DML commands

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

- *SELECT - retrieve data from the adatabase.*
- *INSERT - insert data into atable.*
- *UPDATE - updates existing data within atable.*
- *DELETE-deletesallrecordsfromatable,thespacefortherecordsremain.*

Inserting values into "Bus" table :

Insert into Bus values (1234,'hyderabad', lirupathi');

Insert into Bus values (2345,1hyderabd,Banglore');

Insert into Bus values (23,'hyderabd','Kolkata');

Insert into Bus values (45,11rupathi,'Banglore');

Insert into Bus values (34,1h derab yc11,1Chennar);

Inserting values into "Passenger"table:

Insert into Passenger values (1, 45,'ramesh', 45,'M','abc123');

Insert into Passenger values (2, 78,'geetha', 36,'F','abc124');

Insert into Passenger values (45, 90,'ram', 30,'M',1abc12');

Insert into Passenger values (67, 89,'ravi', 50,'M','abc14');

Insert into Passenger values (56, 22,'seetha', 32,'F','abc55');

Few more Examples of DML commands:

*Select * from Bus; (selects all the attributes and Display)*

UPDATE BUS SET Bus No = 1 WHERE BUS NO=2;

WEEK 7: Querying

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

Practice the following Queries:

1. *Display unique PNR_no of all passengers.*
2. *Display all the names of male passengers.*
3. *Display the ticket numbers and names of all thepassengers.*

4. *Find the ticket numbers of the passenger whose name start with andends with'h'.*
5. *Findthenamesofpassengers,whoseageisbetween30and45,*
6. *Display all the passengers' names beginning with'A'*
7. *Display the sorted list of passenger'snames*

WEEK 8 and WEEK 9: *Querying (continued...)*

You are going to practice queries using Aggregate functions (COUNT, Sum, AVG, and MAX and MIN), GROUP BY, HAVING and Creation and dropping of Views.

1. *Write a Query to display the Information present in the Passenger and cancellationtables.*

   Hint: Use UNION Operator.
2. *Displaythenumberofdaysinaweekonwhichthe9W01busisavailable.*
3. *Find number of tickets booked for each PNR_no using GROUP BY CLAUSE. Hint: Use GROUP BY on PNRNo.*
4. *Find the distinct PNR numbers that arepresent.*
5. *Find the number of tickets booked by a passenger where the number of seats is greaterthan*

1. Hint: Use GROUP BY, WHERE and HAVING CLAUSES.

6. Find the total number of cancelled seats.

WEEK 10: Triggers

Inthisweekyouaregoingtoworkon Triggers.Creationofinserttrigger,delete trigger, update trigger. Practice triggers using the abovedatabase.

Eg: CREATE TRIGGER update check BEFORE UPDATE ON passenger FOR EACH ROW BEGIN IF NEW.TickentNO > 60 THEN

SET New.Tickent no = Ticket no;

ELSE

SET New.Ticketno:at 0;

END IF;

END;

WEEK 11: Procedures

This session you are going to learn Creation of stored procedure, Execution of procedureandmodificationofprocedure.Practiceproceduresusingtheabove database.

Eg: CREATE PROCEDURE myProc ()

BEGIN

SELECT COUNT (Tickets) FROM Ticket WHERE age>=40;

End;

WEEK 12: Cursors

Inthisweekyouneedtodothefollowing:Declareacursorthatdefinesaresult set.Openthecursortoestablishtheresultset.Fetchthedataintolocalvariables as needed from the cursor, one row at a time.Close the cursor when done

CREATE PROCEDURE myProc (in_customer_id INT)

BEGIN

DECLARE v_id INT;

DECLARE v_name VARCHAR (30);

DECLARE c1 CURSOR FOR SELECT stdld,stdFirstname FROM students WHERE

stdId=in_customer_id;

OPEN c1;

FETCH cl into v_id, v_name;

Close c1;

END;

Tables

BUS

Bus No: Varchar: PK (public key)

Source: Varchar

Destination: Varchar

Passenger

PPNO: Varchar(15)) :

PK Name: Varchar(15)

Age int (4)

SexIChar(10) : Male / Female

Address: VarChar(20)

Passenger_Tickets

PPNO: Varchar(15)) :

PK Ticket_No: Numeric (9)

Reservation

PNR_No: Numeric (9) :

FK Journey_date : datetime(8)

No_of_seats : int (8)

Address: Varchar (50)

Contact_No: Numeric (9) —> should not be less than 9 and should not accept any other

Character other than Integer

Status: Char (2): Yes / No

Cancellation

PNR_No: Numeric (9): FK

Journey_date : datetime(8)

No_of_seats : int (8)

Address: Varchar (50)

Contact_No: Numeric (9) —> should not be less than 9 and should not accept any other

Character other than Integer

Status: Char (2): Yes / No

Ticket

Ticket_No: Numeric (9): PK

Journey date: datetime(8)

Age: int (4)

Sex:Char(10) : Male / Female

Source: Varchar

Destination: Varchar

Dep_time: Varchar

Reference Books :

1. *Introduction to SQL, Rick F.Vander Lans, Pearsoneducation.*
2. *Oracle PL/SQL, B.Rosenzweig and E.Silvestrova, Pearsoneducation*
3. *Oracle PL/SQL Programming, Steven Feuerstein,SPD.*
4. *SQL & PL/SQL for Oracle 10g, Black Book, Dr. P. S. Deshpande, Dream Tech.*
5. *Oracle Database 11g PL/SQL Programming, M. Mc Laughlin,TMH.*
6. *SQL Fundamentals, J.J. Patrick, PearsonEducation.*

Course Outcomes :

1. *Abilitytodesignandimplementadatabaseschemaforgivenproblem.*
2. *Be capable to improve skills in Design and build a UIapplication.*
3. *Applythenormalizationtechniquesfordevelopmentofapplicationsoftware to realisticproblems.*
4. *Ability to formulate queries using SQL DML/DDL/DCLcommands.*
5. *Ability to design cursors andprocedures.*

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J5526) WEB PROGRAMMING LAB

B.Tech. III YearI-SEM:CSE **L T P C0**
0 42

Course Objectives :
This course will develop students' knowledge in/on.

1. *Designing a static web page using HTML tags, CSS,javascript.*
2. *Demonstrating a dynamic web page using JDBC, XML schema,servlets.*
3. *Accessing data from different databases using JSPconcepts.*
4. *Understanding the basics ofPHP.*
5. *Accessing the data from the database using MySQL and different types of databases.*

LIST OF EXPERIMENTS :

Week-I

Design the following static web pages with the following attributes:

Basic Tags.

Heading Tags.

List (Ordered and Un-Ordered).

Textbox, Buttons.

Week-II

Design the following static web pages required for an online store web site.

a. Home Page*: The static home page must contain three* **frames***.*

Top frame: *Logo and the stores name and links to Home page, Login page, Registration page, Catalogue page and Cart page.*

Left frame: *At least four links for navigation, which will display the catalogue of respectivelinks.*

Right frame: *The pages to the links in the left frame must be loaded here. Initially this page contains description of the web site.*

Login Page*: Create a simple form with input fields and demonstrate required field validations to validate that all input fields are required and display error messagesiftheabovevalidationsdonothold,navigatetonextpagewhenthe input fields arevalid.*

Week-III

Catalogue Page*: The catalogue page should contain the details of all the books available in the web site in a table. The details should contain the following:*

Snap shot of Cover Page.

Author Name and Publisher.

Price and Add to cart button.

Week-IV

Validation: *Write JavaScript to validate the following fields of the above registration page.*

Name (Name should contains alphabets and the length should not be less than 6 characters).

Password (Password should not be less than 6 characters length).

E-mail id (should not contain any invalid and must follow the standard pattern. **(name@domain.com)**

Phone number (Phone number should contain 10 digits only).

Note: *You can also validate the login page with these parameters.*

CSS (C*ascading* **S***tyle* **S***heets***):** *Design a web page using* **CSS (C***ascading* **S***tyle* **S***heets***)** *which includes the following:*

Use different font, styles: In the style definition you define how each selector should work (font, color etc.).Then, in the body of your pages, you refer to these selectors to activate the styles.

Set a background image for both the page and single elements on the page. You can define the background image for the page like this:

Control the repetition of the image with the background-repeat property. As background-repeat: repeat

Define styles for links

Work with layers

Add a customized cursor

Embedding JavaScript in HTML pages.

Design a form and validate its field by using JavaScript.

Week-V

Design a web page to demonstrate on each button events using JavaScript.

WAP to create popup boxes in JavaScript.

Program to create a class that contains an overloaded method called "add" to calculate the sum of two integers, two float numbers and, one integer and one float.

Week-VI

Display the contents of a database table in a neat format.

Insert **N***, no. of records into a database table using Prepared Statement.*

Enhance the salaries into the database table by 10% who are earning salary greater than 5000 using Callable Statement.

Delete all records whose marks are below 50% and also display the count.

Week-VII

User Authentication

Assumefourusersuser1,user2,user3anduser4havingthepasswordspwd1, pwd2,pwd3andpwd4respectively.Writeaservletfordoingthefollowing.Ifhe is a valid user (i.e., user-name and password match) you should welcome him by name (user-name) else you should display "You are not an authenticated user ". Use init-parameters to do this. Store the user-names and passwords in the web.xml and access them in the servlet by using the getInitParameters() method.

Write a program illustrating MySQL database program using Servlets

Week-VIII

Write a HTML file to create a simple form with input fields and demonstrate requiredfieldvalidationstovalidatethatallinputfieldsarerequiredanddisplay error messages if the above validations do nothold.

Create a JSP Page with and run in JSP Engines.

Demonstrate Session Tracking in JSP.

Week-IX

Create Database Connectivity with JSP page with different JDBC Drivers.

*Create a JSP Page to Insert, Update, Select, and Delete the Data into the Database and from the Database***.**

Week-X

Create a form for your college library entering student details for each student in the college. Validate the form using PHP valuators and display error messages.

Write a PHP which does the following job:

Insert the details of the 3 or 4 users who register with the web site by using registration form. Authenticate the user when he submits the login form using the UserName and Password from the database (instead of cookies).

Week-XI

Createtablesinthedatabasewhichcontainthedetailsofitemsofeachcategory.
Modify your catalogue page in such a way that you should connect to the database and extract data from the tables and display them in the catalogue page usingPHP.

Create and delete MYSQL database using PHP.

Week-XII

Create a PHP program to demonstrate opening and closing a file.

Create a PHP program to demonstrate reading a file and writing in a file.

Text Books:

Kogent, "Web Technologies HTML, CSS, JavaScript, ASP.NET, Servlets, JSP, PHP, ADO.NET, JDBC and XML", 1st Edition, Dreamtech Press (Black Book), ISBN-13:9789351192510, 2013.

Ivan Bayross, "Web Enabled Commercial Application Development Using HTML, JavaScript, DHTML and PHP", BPB Publications, 4th Edition, ISBN-13: 978-8183330084), 2009

Phil Hanna ,"JSP: The Complete Reference", McGraw-Hill, 2nd Edition,(ISBN:0-07-212768-6) 2001 (Chapters 4,5,6,7,12,13,14,16).

Course Outcomes:

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

1. *Develop a static web page using HTML Tags, CSS,javascripts.*
2. *Implement with JDBC connections, XML schema,servlets.*
3. *ImplementawebpageinJSP, accessingthedatafromdifferentdatabase.*
4. *Implement and improve the skills in developing a web page in PHPscripting.*
5. *To retrieve the data using MySQL and other different types ofdatabases.*

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(JMC03)CONSTITUTION OFINDIA

L P C
3 - 3

Course Objectives:

1. *TheConstitutionisthebasicandfundamentallaw.*
2. *To introduce concepts and salient features of the constitutionIndian.*
3. *Analyze the Preamble of the Constitution and identify the core values reflected init;*
4. *Appreciatethecoreconstitutionalvaluesthatpermeatethesalientfeatures ofthe.*
5. *Indian Constitution; and examine the nature of the Indian federal system and the parliamentary form ofgovern.*

Course outcome :

1. *Italsotellsusabouttherightsandalsothedutiesofitscitizens.*
2. *Theyknowabouttherole,powersofmembersoflocalsabhaandrajsabha.*
3. *It lays down the rules to govern the country.*
4. *Role and function of electioncommissioner.*
5. *Poweranddutiesofelectedrepresentedsforpanchayatraj,ZP,corporation and Importance ofdemocracy.*

Unit I

Introduction to Constitution' meaning of the term,, Indian Constitution: Sources andconstitutionalhistory,Features:Citizenship,Preamble,FundamentalRights and Duties, Directive Principles of StatePolicy.

Unit II

Union Government and its Administration Structure of the Indian Union: Federalism, Centre- State relationship, President: Role, power and position, PM and Council of ministers, Cabinet and Central Secretariat, Lok Sabha, Rajya Sabha.

Unit III

State Government and its Administration Governor: Role and Position, CM and Council of ministers, State Secretariat: Organisation, Structure and Functions.

Unit IV

Local Administration District's Administration head: Role and Importance, Municipalities:Introduction, Mayor and role of Elected Representative, CEO of Municipal Corporation, Pachayatiraj: Introduction, PRI: Zila parishadh, Elected officials and their roles, CEO Zila parishadh: Position and role, Block level:

Organizational Hierarchy (Different departments) village level: Role of Elected and Appointed officials, Importance of grass root democracy.

Unit V

Election Commission Election Commission: Role and Functioning, Chief Election Commissioner and Election Commissioners, State Election Commission: Role and Functioning, Institute and Bodies for the welfare of SC/ ST/OBC and women.

REFERENCES :

1. *Books.Recommended.*
2. *Indian Polity' byLaxmikanth.*
3. *Indian Administration' by SubhashKashyap.*
4. *'Indian Constitution' by D.D.Basu.*
5. *'Indian Administration' by Avasti andAvasti.*

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J6527) COMPILER DESIGN

B.Tech. III YearII-SEMCSE **L T P C2**
1 03

Course Objectives :

1. *To learn the various phases ofcompiler.*
2. *To learn the various parsingtechniques.*
3. *To understand intermediate code generation and run-timeenvironment.*
4. *To learn to implement front-end of thecompiler.*
5. *To learn to implement codegenerator.*

Syllabus :

UNIT – I

Overview of Compilation: *Phases of Compilation – Lexical Analysis, Regular Grammarandregularexpressionforcommonprogramminglanguagefeatures, pass and Phases of translation, interpretation, bootstrapping, data structures in compilation – LEX lexical analyzergenerator.*

TopdownParsing:*Contextfreegrammars,Topdownparsing–Backtracking, LL (1), recursive descent parsing, Predictive parsing, Preprocessing steps required for predictiveparsing.*

UNIT – II

Bottom up parsing: *Shift Reduce parsing, LR and LALR parsing, Error recovery in parsing , handling ambiguous grammar, YACC – automatic parser generator.*

UNIT – III

Semantic analysis: *Intermediate forms of source Programs – abstract syntax tree, polish notation and three address codes. Attributed grammars, Syntax directed translation, Conversion of popular Programming languages language Constructs into Intermediate code forms, Type checker.*

Symbol Tables: *Symbol table format, organization for block structureslanguages, hashing, and tree structures representation of scope information. Block structures and non block structure storage allocation: static, Runtime stack and heap storage allocation, storage allocation for arrays, strings andrecords.*

UNIT – IV

Code optimization: *Consideration for Optimization, Scope of Optimization, local optimization, loop optimization, frequency reduction, folding, DAG representation.*

Data flow analysis: *Flow graph, data flow equation, global optimization, redundantsubexpressionelimination,Inductionvariableelements,Livevariable analysis, Copypropagation.*

UNIT – V

Object code generation: *Object code forms, machine dependent code optimization, register allocation and assignment generic code generation algorithms, DAG for register allocation.*

Text Books :

1. *Principles of compiler design -A.V. Aho . J.D.Ullman; PearsonEducation.*
2. *ModernCompiler Implementation in C- Andrew N. Appel, Cambridge UniversityPress.*

References Books :

1. *Lex & yacc – John R. Levine, Tony Mason, Doug Brown,O'reilly.*
2. *Modern Compiler Design- Dick Grune, Henry E. Bal, Cariel T. H. Jacobs, Wileydreamtech.*
3. *Engineering a Compiler-Cooper & Linda,Elsevier.*
4. *Compiler Construction, Louden,Thomson.*

Course Outcomes :

1. *Understand the different phases ofcompiler.*
2. *Design a lexical analyzer for a sample language.*
3. *Apply different parsing algorithms to develop the parsers for a given grammar.*
4. *Understand syntax-directed translation and run-timeenvironment.*
5. *Learn to implement code optimization techniques and a simple code generator. Design and implement a scanner and a parser using LEX and YACCtools and improve the employability for traning course*

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J6528) COMPUTER NETWORKS

B.Tech. III YearII-SEMCSE	**L T PC**
B. Tech. IV Year ISem ECE	**2 1 03**

Course Objectives :

This course will develop students' knowledge in/on.

1. *Computer network architecture and referencemodel.*
2. *Differenttypesofdatalinkandmediumaccesscontrolprotocols.*
3. *Developing routing algorithms andinternetworking.*
4. *Network protocols for real time applications.5.Protocols used in Transport and Applicationlayers.*

Syllabus :

UNIT - I

OverviewoftheInternet:*Protocol,LayeringScenario,TCP/IPProtocolSuite: The OSI Model, Internet history standards and administration; Comparison of the OSI and TCP/IP referencemodel.*

Physical Layer: *Guided transmission media, wireless transmission media.*

Data Link Layer - *design issues, CRC codes, Elementary Data Link Layer Protocols, sliding window protocol*

UNIT - II

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

UNIT - III

Network Layer: *Network Layer Design issues, store and forward packet switchingconnectionlessandconnectionorientednetworks-routingalgorithms-optimality principle, shortest path, flooding, Distance Vector Routing, Control to Infinity Problem, Hierarchical Routing, Congestion control algorithms, admissioncontrol.*

UNIT - IV

Internetworking:*Tunneling,InternetworkRouting,Packetfragmentation,IPv4, IPv6 Protocol, IP addresses, CIDR, IMCP, ARP, RARP,DHCP.*

Transport Layer: *Services provided to the upper layers elements of transport protocol-addressingconnectionestablishment,connectionrelease,Connection Release, CrashRecovery.*

UNIT - V

TheInternetTransportProtocols*UDP-RPC,RealTimeTransportProtocols,* **The Internet Transport Protocols-** *Introduction to TCP, The TCP Service Model, The TCP Segment Header, The Connection Establishment, The TCP Connection Release, The TCP Connection Management Modeling, The TCP Sliding Window, The TCP Congestion Control, The future ofTCP.*

Application Layer- *Introduction, providing services, Applications layer paradigms,Clientservermodel,Standardclient-serverapplication-HTTP,FTP, electronic mail, TELNET, DNS,SSH.*

Text Books :

1. *DataCommunicationsandNetworking-BehrouzA.Forouzan,FifthEdition TMH,2013.*
2. *Computer Networks - Andrew S Tanenbaum, 4th Edition, Pearson Education.*

References Books :

1. *An Engineering Approach to Computer Networks - S. Keshav, 2ndEdition, PearsonEducation.*
2. *Understanding communications and Networks, 3rd Edition, W. A. Shay, CengageLearning.*
3. *IntroductiontoComputerNetworksandCyberSecurity,Chwan-Hwa(John) Wu, J. David Irwin, CRCPress.*
4. *ComputerNetworks,L.L.PetersonandB.S.Davie,4thedition,ELSEVIER.*
5. *ComputerNetworking:ATop-DownApproachFeaturingtheInternet,James F. Kurose, K. W. Ross, 3rd Edition, Pearson Education.*

Course Outcomes :

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

1. *Demonstrate computer network architecture, OSI and TCP/IP reference models.*
2. *Determinetypesofdatalinkandmediumaccesscontrolprotocols.*
3. *Use Routing algorithms andinternetworking.*
4. *Design network protocols for real timeapplication.*
5. *Understand internals of main protocols such as HTTP, FTP, SMTP, TCP, UDP,IP.And improves the employability after traning the course.*

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J6529) MACHINE LEARNING
(Professional Elective –II)

B.Tech. III YearII-SEMCSE **L T P C2 1 03**

Course Objectives :

To understand the concepts of machine learning..

1. *To appreciatesupervisedandunsupervisedlearningandtheirapplications.*
2. *To understand the theoretical and practical aspects of Probabilistic GraphicalModels.*
3. *To appreciate the concepts and algorithms of reinforcementlearning.*
4. *To learn aspects of computational learningtheory.*
5. *To design appropriate machine learning algorithms for problemsolving.*

UNIT I

INTRODUCTION: *Machine Learning - Machine Learning Foundations – Overview – Design of a Learning system - Types of machine learning – Applications Mathematical foundations of machine learning - random variables and probabilities - Probability Theory – Probability distributions -Decision Theory- Bayes Decision Theory - Information Theory.*

UNIT II

SUPERVISED LEARNING:*Linear Models for Regression - Linear Models for Classification–NaïveBayes-DiscriminantFunctions-ProbabilisticGenerative Models -Probabilistic Discriminative Models - Bayesian Logistic Regression. Decision Trees - Classification Trees- egression Trees - Pruning. Neural Networks-Feed-forwardNetworkFunctions-Back-propagation.Supportvector machines - Ensemble methods- Bagging-Boosting.*

UNIT III

UNSUPERVISED LEARNING:*Clustering- K-means - EM Algorithm- Mixtures ofGaussians.TheCurseofDimensionality-DimensionalityReduction-Factor analysis - Principal Component Analysis - Probabilistic PCAIndependent componentsanalysis.*

UNIT IV

PROBABILISTIC GRAPHICAL MODELS:*Graphical Models - Undirected graphical models - Markov Random Fields - Directed Graphical Models - Bayesian Networks - Conditional independence properties - Inference – LearningGeneralization - Hidden Markov Models - Conditional random fields(CRFs).*

UNIT V

ADVANCED LEARNING:*Sampling –Basic sampling methods – Monte Carlo. Reinforcement Learning- K-Armed BanditElements - Model-Based Learning-Value Iteration- Policy Iteration. Temporal Difference LearningExploration Strategies- Deterministic and Non-deterministic Rewards and Actions Computational Learning Theory - Mistake bound analysis, sample complexity analysis, VC dimension. Occam learning, accuracy and confidence boosting.*

Text Books :

1. *Tom Michel, Machine Learning. Mc Graw Hill.1997.*
2. *Trevor Hus tie, Robert Tibshirani & Jerome Friedman. The Elements of Statically Learning, Springer Veriag2001.*

Reference Books :

- *ChristopherBishop,“PatternRecognitionandMachineLearning”Springer, 2007.*
- *Kevin P. Murphy, “Machine Learning: A Probabilistic Perspective”, MIT Press,2012.*
- *Ethem Alpaydin, “Introduction to Machine Learning”, MIT Press, Third Edition,2014.*
- *Tom Mitchell, “Machine Learning”, McGraw-Hill,1997.*
- *Trevor Hastie, Robert Tibshirani, Jerome Friedman, “The Elements of Statistical Learning”, Springer, Second Edition,2011.*
- *Stephen Marsland, “Machine Learning - An Algorithmic Perspective”, Chapman and Hall/CRC Press, Second Edition,2014.*

Course Outcomes :

Upon completion of this course, the student should be able to

1. *Design a neural network for an application of yourchoice.*
2. *Implement probabilistic discriminative and generative algorithms for an application of your choice and analyze theresults.*
3. *Use a tool to implement typical clustering algorithms for different types of applications.*
4. *Design and implement an HMM for a sequence model type ofapplication.*
5. *Identify applications suitable for different types of machine learning with suitablejustification.And increases employability on traning the course*

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J6530) OBJECT ORIENTED ANALYSIS AND DESIGN
(Professional Elective-II)

B.Tech. III YearII-SEMCSE **L T P C2 1 03**

Course Objectives :

1. *Concisely define the following key terms: class, object, state, behaviour, object class, class diagram, object diagram, operation, encapsulation, update operation, scope operation, association, association role, multiplicity, association class, aggregation, andcomposition.*
2. *Describe the activities in the different phases of the object-oriented development life cycle. Model a real-world application by using a UML classdiagram.*
3. *Provideasnapshotofthedetailedstateofasystematapointintimeusing a UML (Unified Modeling Language) objectdiagram.*
4. *Recognise when to use generalisation, aggregation, and composition relationships.*
5. *Specifydifferenttypesofbusinessrulesinaclassdiagram.*

Syllabus :

UNIT– I

Introduction to UML: *Importance of modelling, principles of modelling, object oriented modelling, conceptual model of the UML, Architecture, Software Development Life Cycle.*

UNIT– II

Basic Structural Modelling: *Classes, Relationships, common Mechanisms, and diagrams. Advanced Structural Modelling: Advanced classes, advanced relationships,Interfaces,TypesandRoles,Packages.Class&ObjectDiagrams: Terms,concepts,modellingtechniquesforClass&ObjectDiagrams.*

UNIT– III

Basic Behavioural Modelling-I: *Interactions, Interaction diagrams. Basic Behavioural Modelling-II: Use cases, Use case Diagrams, Activity Diagrams.*

UNIT– IV

Advanced Behavioural Modelling:*Events and signals, state machines, processes and Threads, time and space, state chart diagrams Architectural Modelling: Component, Deployment, Component diagrams and Deployment diagrams.*

UNIT– V

*P***atterns and Frameworks, Artificer Diagrams. Case Study***: The Unified library application.*

Text Books :

1 *Grady Booch, James Rumbaugh, Ivar Jacobson : The Unified Modeling Language User Guide, Pearson Education 2ndEdition.*

2 *Hans-Erik Eriksson, Magnus Penker, Brian Lyons, David Fado: UML 2 Toolkit, WILEY-Dreamtech India Pvt.Ltd.*

Reference Books :

1. *Meilir Page-Jones: Fundamentals of Object Oriented Design in UML PearsonEducation.*
2. *Pascal Rogues: Modeling Software Systems Using UML2, WILEY- Dreamtech India Pvt.Ltd.*
3. *Atul Kahate: Object Oriented Analysis &Design, The McG rawHillsCompanies.*
4. *Mark Priestley: Practical Object-Oriented Design with UML, TMH.*
5. *ApplingUMLandPatterns:AnintroductiontoObject—Oriented.*
6. *Analysis and Design and Unified Process, CraigLarman, PearsonEducation.*

Course Outcomes :

1. *Graduatecanabletotakeupthecasestudiesandmodelinit.*
2. *Different views with respect user requirement such as use case, logical, component and deployment and etc, and preparation of document of the project for the unified Libraryapplication.*
3. *Abilitytoanalyzeandmodelsoftwarespecifications.*
4. *Ability to abstract object-based views for generic softwaresystems.*
5. *Ability to deliver robust softwarecomponents.to improve the employability*

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J6531) ADVANCED DATABASES
(Professional Elective –II)

B.Tech. III YearII-SEMCSE **L T P C2**
1 03

Course Objectives :

This course will develop student's knowledge in/on.

1. *Data on external storage and file organizations.*
2. *The features of object databasesystems.*
3. *The architectures of distributeddatabases.*
4. *The deductive databases using RecursiveQueries.*
5. *This module looks at the technologies, data models and policies that such systemsrequire.*

Syllabus :

UNIT-I

OverviewofStorageandIndexing:*Dataonexternalstorage,fileorganizations and indexing, index data structures, comparison of file organizations, indexes and performancetuning.*

Storing Data Disks and Files: *The memory hierarchy, redundant arrays of independent disks, disk space management, buffer manager, files of records, page formats, record formats.*

Tree-Structured Indexing*: Intuition for tree indexes, ISAM, B+ trees, search, insert, delete, duplicates, b + trees in practice.*

UNIT-II

Hash-Based Indexing*: Static hashing, extendible hashing, linear hashing, extendible versus linear hashing.*

Object-Database Systems*: Motivating example, structured data types, operations on structured data, encapsulation and ADTS, inheritance, objects, OIDS and reference types, database design for an ORDBMS, ORDBMS implementation challenges, OODBMS, comparing RDBMS,OODBMS, and ORDBMS.*

UNIT-III

Distributed Databases*: Introduction, distributed data processing, distributed database system, promises of DDBSS, problem areas.*

Distributed DBMS Architecture: *Architectural models for distributed DBMS, DDMBS architecture.*

DistributedDatabaseDesign:*Alternativedesignstrategies,distributiondesign issues, fragmentation, andallocation.*

UNIT-IV

Query Processing and decomposition: *Query processing objectives, characterization of query processors, layers of query processing, query decomposition, localization of distributed data.*

Parallel Databases: *Introduction, architectures for parallel databases, parallel queryevaluation,parallelizingindividualoperations,parallelqueryoptimization.*

Deductive Databases: *Introduction to recursive queries, theoretical foundations, recursive queries with negation, from data log to SQL, evaluating recursive queries.*

UNIT-V

Web databases:*Introduction to information retrieval, indexing for text search, web search engines, managing text in DBMS, a data model for XML.*

XQUERY: *Querying xml data, efficient evaluation of xml queries.*

Spatial Data Management: *Types of spatial data and queries, applications involvingspatialdata,introductiontospatialindexes,indexingbasedonspace-filling curves, Grid files, R Trees: Point and region data, issues on high dimensionalindexing.*

Text Book :

RaghuRamakrishnanandJohannesGehrke,"DatabaseManagementSystems ", First Edition, Mc-Graw Hill, ISBN No: 0-07-123151-X,2003.

Reference Books :

1. *Thomas Connolly and Carolyn Begg, "Database Systems", Third Edition, Pearson Education, ISBN No: 81-7808-861-4, 2003.*
2. *Hector Garcia Molina,Jeffery D Ullman,Jennifer Widom," Database Systems:The Complete Book",2nd Edition, Mc-Graw Hill,2008.*

Course Outcomes :

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

1. *Analyze the Index data structures and Performancetuning.*
2. *Outline the encapsulation and abstract data types in object database systems.*
3. *Design the recursive queries to manage the XML database environment efficiently.*
4. *Gaintheknowledgeinspacefillingcurveswithindexingtechniques.*
5. *Design & Implement Advanced DatabaseSystems.*

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J6533) DISTRIBUTED COMPUTING
(Professional Elective –III)

B.Tech. III YearII-SEMCSE **L T P C3 0 03**

Course Objectives :

1. *Presenttheprinciplesunderlyingthefunctionofdistributedcomputing.*
2. *Createanawarenessofdistributedcomputingdesignandimplementation.*
3. *Describe and distinguish synchronization and concurrency control in distributed computingsystem.*
4. *Understandingdistributedtransactionandcontrolofdistributeddeadlocks.*
5. *Understanding distributed computing in cloud and gridcomputing.*

Syllabus :

UNIT I

Characterization of Distributed Systems: Introduction, Examples of distributed systems, Resource sharing and the web, Challenges.
System Models: Introduction, Architectural models, Fundamental models.
OperatingSystemSupport:Introduction,Theoperatingsystemlayer,Protection, Processes and threads, Communication and invocation, Operating system architecture.

UNIT II

Interprocess communication: Introduction, The API for the internet protocols, External data representation and marshalling, Client Server communication, Group Communication.

Case study*: Interprocess communication: Introduction to UNIX.*
Distributed objects and Remote Invocation: Introduction, Communication between distributed objects. Remote procedure call, Events and notifications.
Case study*: Java RMI. Name Services: Introduction, Name services and the Domain Name System.*

UNIT III

Time and Global States: Introduction, Clocks events and process states, Synchronizing physical clocks, Logical clocks, Global states, Distributed debugging.CoordinationandAgreement:distributedmutualexclusion,Election, Multicast communication, Consensus and relatedproblems.

UNIT IV

Transactions and Concurrency Control: Introduction, Transactions, Nested transactions, Locks Optimistic concurrency control. Timestamp ordering, *Comparison of methods for concurrency control. Distributed Transactions: Introduction, Flat and nested distributed transactions, Atomic commit process, Concurrency control in distributed transactions. Distributed deadlocks, Transaction recovery. Replication: Introduction, System model and group communication, Fault-tolerant services.*

UNIT V

Grid Computing: How Grid Computing Works, Grid Middleware, Grid Architecture, Types of Grids, Grid Computing Applications.
Service Oriented Architecture, Web Services , Service-Oriented Grid, SOA Design and Development, Advantages and the Future of SOA.
Cloud Computing: Features and Architecture, Cloud Computing Landscape.

Text Books :

1. *Colouris,Dollimore,Kindberg,"DistributedSystemsconceptsandDesign", 5th Ed. Pearson Education,2016.*
2. *Andrew S. Tanenbaum, Van Steen, " Distributed Systems" , Pearson Education ,2002.*

Reference Books :

1. *Sunita Mahajan and Seema Shah ,"Distributed Computing", Oxford University Press,2013.*
2. *S.Ghosh,ChapmanandHall/CRC,"DistributedSystems",Taylor&Francis Group,2010.*
3. *Pradeep K.Sinha ,"Distributed Operating Systems Concepts and Design" , PHI.*

Course Outcomes *:*

After completion of the course, student should be able to:

1. *Understand the characteristics and models in distributedcomputing.*
2. *Understand key mechanisms of remoteexecution.*
3. *Get familiar with synchronization of processes in distributedenvironment.*
4. *Acquire the knowledge of distributed transaction, concurrency and deadlock.*
5. *Acquiretheknowledgeofworkingofgridandcloudcomputing.*

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J6534) HIGH PERFORMANCE COMPUTING
(Professional Elective –III)

B.Tech. III YearII-SEMCSE **L T P C3 0 03**

Course Objectives :

1. *Analyze parallel programs and message passingparadigms.*
2. *Identifying the issues involved in ParallelComputing.*
3. *Programming shared address spaceplatforms.*
4. *Open MP and Dense matrixalgorithms.*
5. *GPU programming and heterogeneous computing with Open CL andanalyze parallel programs and message passingparadigms.*

Syllabus :

UNIT-I

Introduction to Parallel Computing: *Importance of parallelism, scope of parallel computing.*

Parallel Programming Platforms: *Implicit parallelism, Limitations of memory system performance, control structure, communication model, physical organization, and communication costs in parallel machines, Routing mechanisms for interconnection networks, Impact of process-processormapping and mapping techniques.*

UNIT-II

Principles of parallel algorithm design: *Preliminaries, decomposition techniques, characteristics of tasks and interactions, mapping techniques for load balancing, methods for reducing interaction overheads, parallel algorithm models.*

Basic communication operations: *One-to-all broadcast and all-to-one reduction, all-to-all broadcast and reduction, All-reduce and prefix-sum operations, scatter and gather, All-to-all personalized communication, circular shift and splitting routing messages in parts.*

UNIT-III

Analytical modeling of parallel programs: *sources of overhead in parallel programs, performance metrics for parallel systems, the effect of granularity onperformance,scalabilityofparallelsystems,minimumexecutiontimeand* *minimum cost-optimal execution time, asymptotic analysis of parallel programs.*

Programming using message passing paradigm: *Principles of message-passing programming, building blocks, Message Passing Interface(MPI), Topologies and embedding, Overlapping communication with computation, collective communication and computation operations, Groups and communicators.*

UNIT-IV

Programming shared address space platforms: *Threads basics, need of threads,POSIXthreadAPI,creationandterminationofthread,Synchronization primitives,controllingthreadandsynchronizationattributes,threadcancellation, Composite synchronization constructs, OpenMP-Threading building blocks, An overview of Memory Allocators, An overview of Intel Threading building blocks.* **Sorting:** *Sorting networks, Bubble sort, Quick sort, Bucket sort and other sorting algorithms*, *understanding Dense Matrix Algorithms and Graph algorithms withexamples*.

UNIT-V

Introduction to General-purpose GPU programming (CUDA): *Brief History of GPUs, An Overview of GPU Programming, An Overview of GPU Memory Hierarchy Features, An Overview of CUDA and its architecture*, *Applications of CUDA, Introduction to CUDA C, Parallel Programming in CUDAC.*

Introduction to Heterogeneous Computing – *OpenCL, OpenCL Kernel, OpenCL memory model, OpenCL Execution Model, OpenCL Platform and Devices, OpenCL execution environment, Overview of OpenCL API, Heterogeneous Programming in OpenCL.*

Text Books:

1. *Ananth Grama, Anshul Gupta, George Karypis, Vipin Kumar, "Introduction to Parallel Computing" Second Edition, Pearson Education, ISBN-13:978-0201648652, 2003. (Chapters:1-10).*
2. *Jason Sanders, Edward Kandrot, "CUDA By Example – An Introduction to GeneralPurposeGPUProgramming",FirstEdition,AddisonWesley,ISBN- 13: 978-0131387683, 2010. (Chapters:1-4).*

Reference Books :

1. *BenedictRGaster,LeeHowes,DavidRKaeliPerhaadMistryDanaSchaa, "Heterogeneous Computing with OpenCL", McGraw-Hill, Inc. Newyork, Second Edition, ISBN-13: 978-0124058941, 2012 (Chapters:2).*
2. *Michael J. Quinn, "Parallel Programming in C with MPI and OpenMP", First Edition, McGraw-Hill Science, and ISBN-13: 978-0072822564,2003.*

Course Outcomes :

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

1. *Design and analyze the parallel algorithms for real world problems and implement them on available parallel computersystems.*
2. *Optimizetheperformanceofaparallelprogramtosuitaparticularhardware and softwareenvironment.*
3. *Write Programs using accelerator technologies of GPUs with CUDA, OpenC.*
4. *Design algorithms suited for Multi-core processor systems using OpenCL, OpenMP, threadingtechniques.*
5. *Have an awareness of the modern field of computational science and engineering and of the impact of high performance computing on science andindustry.*

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J6535) SOFTWARE ENGINEERING

(Professional Elective –III)

B.Tech. III YearII-SEMCSE **L T P C3 0 03**

Course Objectives :

1. *To understand the software life cycle system and the different software architecturalviews.*
2. *To understand the software requirement engineering and SRSdocument.*
3. *A general understanding of software process models.*
4. *To aware of Software Engineering methods and practices, and their appropriateapplication.*
5. *To understand the V and V techniques, design of softwareproduct.*

Syllabus :

UNIT –I

Introduction to Software Engineering: *The evolving role of software, Changing Nature of Software, Legacy Software, Software myths.*

A Generic view of process: *Software engineering- A layered technology, a processframework,TheCapabilityMaturityModelIntegration(CMMI),Process patterns, process assessment, personal and team processmodels.*

Process models: *The waterfall model, Incremental process models, Evolutionary process models, The Unified process.*

UNIT - II

Software Requirements: *Functional and non-functional requirements, User requirements, System requirements, Interface specification, the software requirements document.*

Requirements engineering process: *Feasibility studies, Requirements elicitation and analysis, Requirements validation, Requirements management.*

System models: *Context Models, Behavioral models, Data models, Object models, structured methods.*

UNIT – III

Design Engineering: *Design process and Design quality, Design concepts, the design model.*

Creating an architectural design: *Software architecture, Data design, Architectural styles and patterns, Architectural Design.*

Object-Oriented Design: *Objects and object classes, An Object-Oriented design process, Design evolution.*

Performing User interface design: *Golden rules, User interface analysisand design,interfaceanalysis,interfacedesignsteps,Designevaluation.*

UNIT - IV

Testing Strategies: *A strategic approach to software testing, test strategies for conventional software, Black-Box and White-Box testing, Validationtesting, System testing, the art ofDebugging.*

Product metrics: *Software Quality, Metrics for Analysis Model, Metrics for Design Model, Metrics for source code, Metrics for testing, Metrics for maintenance.*

Metrics for Process and Products: *Software Measurement, Metrics for software quality.*

UNIT –V

RiskManagement:*Reactivevs.ProactiveRiskstrategies,softwarerisks,Risk identification, Risk projection, Risk refinement, RMMM, RMMMPlan.*

QualityManagement:*Qualityconcepts,Softwarequalityassurance,Software Reviews, Formal technical reviews, Statistical Software quality Assurance, Software reliability, The ISO 9000 qualitystandards.*

Text Books :

1. *Software engineering A practitioner's Approach, Roger S Pressman, 6th edition. McGrawHill InternationalEdition.*
2. *Software Engineering, Ian Sommerville, 7th edition, Pearsoneducation.*

Reference Books :

1. *Software Engineering, A Precise Approach, Pankaj Jalote, Wiley India, 2010.*
2. *Software Engineering: A Primer, Waman S Jawadekar, Tata McGraw-Hill, 2008.*
3. *Fundamentals of Software Engineering, Rajib Mall, PHI,2005.*
4. *Software Engineering, Principles and Practices, Deepak Jain, Oxford UniversityPress.*
5. *SoftwareEngineering1:Abstractionandmodelling,DinerBjorner,Springer International edition,2006.*
6. *Software Engineering2: Specification of systems and languages, Diner Bjorner, Springer International edition2006.*
7. *Software Engineering Foundations, Yingux Wang, Auerbach Publications, 2008.*
8. *Software Engineering Principles and Practice, Hans Van Vliet, 3rd edition, John Wiley & SonsLtd.*

Course outcomes :

The student will be able to

1. *Applythefunctionalandnon-functionalrequirementstomodelaneffective softwareproduct.*
2. *Analyze,designandimplementanobjectorientedapproachsystem.*
3. *Enhance the testing tools for effectivedebugging.*
4. *Analyze the metrics, risk and the quality issues for designing a process/ product.*
5. *Testsecuritylevelsofasoftwareandmangesecuritysoftware's.And improve to increase employability in software industry*

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J6536) COMPILER DESIGN AND COMPUTER NETWORKS LAB

B.Tech. III YearII-SEMCSE **L T P C0**
0 42

Course Objectives :

1. *To provide an understanding of the language translation peculiarities by designing a complete translator for a minilanguage.*
2. *The* **course** *is intended to teach the students the basic techniques that underlie the practice of* **Compiler***Construction.*
3. *The* **course** *will introduce the theory and tools that can be standarly employed in order to perform syntax-directed translation of a high-level programming language into an executablecode.*
4. *Introduce the student to advanced networking concepts, preparing the student for entry Advanced courses in computernetworking.*
5. *Allow the student to gain expertise in some specific areas of networking suchasthedesignandmaintenanceofindividualnetworks.*

Recomended System / Software Requirements :

- *IntelbaseddesktopPCwithminimumof166MHZorfasterprocessorwith atleast 64 MB RAM and 100 MB free diskspace.*
- *C++compiler.*

LIST OF EXPERIMENTS :

ConsiderthefollowingminiLanguage,asimpleproceduralhigh-levellanguage, only operating on integer data, with a syntax looking vaguely like a simple C crossed with Pascal. The syntax of the language is defined by the following BNFgrammar:

<program> ::= <block>

<block> ::= { <variabledefinition><slist> } | { <slist> }

<variabledefinition> ::= int<vardeflist>;

<vardeflist> ::= <vardec> | <vardec>, <vardeflist>

<vardec> ::= <identifier> | <identifier> [<constant>]

<slist> ::= <statement> | <statement>; <slist>

<statement> ::= <assignment> | <ifstatement> | <whilestatement> | <block> | <printstatement> | <empty>

<assignment> ::= <identifier> = <expression> | <identifier> [<expression>] = <expression>

<ifstatement>::=<bexpression>then<slist>else<slist>endif|if<bexpression> then <slist>endif

<whilestatement> ::= while <bexpression> do <slist> enddo

<printstatement> ::= print (<expression>)

<expression> ::= <expression><additionop><term> | <term> | addingop> <term>

<bexpression> ::= <expression><relop><expression>

<relop> ::= < | <= | == | >= | > | !=

<addingop> ::= + | -

<term> ::= <term><mulitop><factor> | <factor>

*<multop> ::= * | /*

<factor> ::= <constant> | <identifier> | <identifier> [<expression>] | (<expression>)

<constant> ::= <digit> | <digit><constant>

<identifier> ::= <identifier><letterordigit> | <letter>

<letterordigit> ::= <letter> | <digit>

<letter> ::= a|b|c|d|e|f|g|h|i|j|k|l|m|n|o|p|q|r|s|t|u|v|w|x|y|z

<digit> ::= 0|1|2|3|4|5|6|7|8|9

<empty> has the obvious meaning

Comments (zero or more characters enclosed between the standard C / Java style comment brackets /...*/) can be inserted. The language has rudimentary support for 1-dimensional arrays.*

The declaration

int a[3] declares an array of three elements, referenced as a[0], a[1] and a[2] Note also that you should worry about the scoping of names.
A simple program written in this language is:

```
{
 int a[3], t1, t2;
 t1 = 2;
 a[0] = 1; a[1] = 2; a[t1] = 3;
 t2 = -(a[2] + t1 * 6)/ a[2] - t1);
 if t2 > 5 then
 print(t2);
 else
 {
  int t3;
  t3 =99;
  t2 =-25;
  print(-t1 + t2 * t3); /* this is a comment on 2 lines */
 }
endif.
```

1. *Design a Lexical analyzer for given language. The lexical analyzer should ignore redundant spaces, tabs andnewlines.*
2. *LEX to count the number of characters, words, spaces and lines in a given input file Programusing.*
3. *Program using LEX to recognize and count the number of identifiers in a given inputfile.*
4. *Implement the lexical analyzer using JLex, flex or lex or other lexical analyzer generartingtools.*
5. *Design Predictive parser for the givenlanguage.*
6. *Design LALR bottom up parser for the above language.*
7. *Convert the BNF rules into Yacc from and write code to generate abstract syntaxtree.*
8. *Write program to generate machine code from the abstract syntax tree generated by theparser.*

COMPUTER NETWORKS LAB :

1. *Implement Bit-Stuffing in Clanguage.*
2. *Implement Character-Stuffing in Clanguage.*
3. *Write a C program for Cyclic Redundancy check (CRC) at sender side and receiverside.*
4. *ImplementDijkstra'salgorithmtocomputetheshortestpathtoagraph*
5. *Implement the Routing table to graph using Distance Vector Routing algorithm.*
6. *Implement the DESalgorithm.*
7. *Implement the RSAalgorithm.*

Course outcomes :

1. *Identify the different types of network topologies andprotocols.*
2. *Identify the different types of network devices and their functions within a network.*
3. *Implement and develop skills in design of DES and RSAalgorithms.*
4. *Implement a lexical analyzer from a specification of a language's lexical rules.*
5. *Compute the FIRST set for a BNF grammar and Compute follow set - Compute the FOLLOW set for a BNFgrammar.*

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J6537) OBJECT ORIENTED ANALYSIS AND DESIGN LAB

B.Tech. III YearII-SEMCSE **L T P C0**
0 42

Course Objectives :

The course will develop student's knowledge in/on…

1. *Use case documents that capture requirements for a softwaresystem.*
2. *Class diagrams that model both the domain model and design model of a softwaresystem.*
3. *Transforming a designed model into code through a mapping to an implementationlanguage.*
4. *Functions of each object-oriented analysis and design model using the UML casetools.*
5. *Applying Unified modeling to real worldapplications.*

LIST OF EXPERIMENTS :

Experiment-I:

Design Forward Engineer Class diagrams for the following.

a. *FileSystem*
b. *SpreadSheet*
c. *WindowManager*
d. *School InformationSystem*

Experiment-II:

Design Reverse Engineering for the following Class specifications

a. *Classstudentwithattributesname,roll_noandoperationstudy()*
b. *RelationshipAggregation*
c. *RelationshipGeneralization*
d. *Interface.*

Experiment-III:

Construct Use case Diagrams for the following.

a. *DiagramEditor*
b. *Library InformationSystem*
c. *BankingSystem*
d. *Cab DispatchingSystem.*

Experiment-IV:

Construct Sequence Diagrams for the following.

a. *MobilePhone*
b. *Use case student register for acourse*

c. DiagramEditor.

Experiment-V:

Construct Collaboration Diagrams for the following.

a. Use case Librarian issues books tostudent.
b. MobilePhone
c. DiagramEditor.

Experiment-VI:

Construct Activity Diagrams for the following.

a. ATMTransaction
b. TicketMachine
c. Sales OrderProcessing.

Experiment-VII:

Construct State Chart Diagrams for the following.

a. Account
b. CDPlayer
c. ATMmachine.

Experiment-VIII:

Case Study 1: Passport Automation System

Experiment-IX:

Case Study 2: Credit card processing

Experiment-X:

Case Study 3: BPO management system

Experiment-XI:

Case Study 4: e-book management system.

Experiment-XII:

Case Study 5: Recruitment system.

Text Books :

1. Grady Booch, James Rumbaugh, Ivar Jacobson, "The Unified Modeling Language User Guide", 2nd Edition, Addison-Wesley Professional, ISBN-13: 978-0321267979, 2005.

Course Outcomes :

Upon successful completion of this course, the students will be able to.

1. Eexplainbasicobjectorientedconceptssuchastypes,inheritance&interfaces.
2. Implement Forward and Reverse EngineeringTechniques.
3. Eexplain the facets of the Unified Process approach to designing and building softwaresystem.
4. DevelopobjectorienteddesignsofsoftwaresuingUnifiedModelingLanguage.
5. Develop UML models for real worldapplications.

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(UGC-AUTONOMOUS)

(J7538) DATAMINING

B.Tech. IV YearI-SEMCSE **L T P C3 0 03**

Course Objectives :

1. *Understand data mining principles and techniques: Introduce DM as a cutting edge business intelligence method and acquaint the students with the DM techniques for building competitive advantage through proactive analysis,predictivemodeling,andidentifyingnewtrendsandbehaviors.*
2. *Building basicterminology.*
3. *Learnhowtogatherandanalyzelargesetsofdatatogainusefulbusiness understanding.*
4. *Learn how to produce a quantitative analysis report/memo with the necessary information to makedecisions.*
5. *Describing and demonstrating basic data mining algorithms, methods,and tools.*

Syllabus :

UNIT I

Introduction: Fundamentals of data mining, Data Mining Functionalities, ClassificationofDataMiningSystems,DataMiningTaskPrimitives,Integration ofaDataMiningSystemwithaDatabaseoraDataWarehouseSystem,Issues in Data Mining. Data Preprocessing: Need for Preprocessing the Data, Data Cleaning, Data Integration and Transformation, Data Reduction, Discretization and Concept HierarchyGeneration.

UNIT II

Data Warehouse and OLAP Technology for Data Mining: Data Warehouse, Multidimensional Data Model, Data Warehouse Architecture, Data Warehouse Implementation,UsageofDataWarehousingOnlineAnalyticalProcessingand Mining Data Cube Computation: Efficient Methods for simple Data Cube Computation (Full Cube, Iceberg Cube, Closed Cube andShell Cube),DiscoveryDrivenexplorationofdatacubes,Attribute-OrientedInduction for data characterization and itsimplementation.

UNIT III

MiningFrequentPatterns,AssociationsandCorrelations:BasicConcepts,The Apriori algorithm for finding frequent itemsets using candidate generation, Generating association rules from frequent itemsets, Mining frequent itemsets without candidate generation, Mining various kinds of Association Rules, CorrelationAnalysis.

UNIT IV

Classification and Prediction: Description and comparison of classification and prediction, preparing data for Classification and Prediction, Classification by Decision Tree Induction, Bayesian Classification, Rule-Based Classification, ClassificationbyBackpropagationPrediction,linearandnon-linearregression, evaluating accuracy of a Classifier or a Predictor.

UNIT V

Cluster Analysis: Types of Data in Cluster Analysis, A Categorization of Major Clustering Methods, k-means and k-mediod methods, CLARANS, Agglomerative and divisive hierarchical clustering, chameleon dynamic modeling, Constraint-Based Cluster Analysis, Outlier Analysis.

Text Books :

1. *Jiawei Han, Micheline Kamber and Jian Pei, “Data Mining – Concepts and Techniques”,3rdedition,MorganKaufmannPublishers,ELSEVIER,2012.*
2. *Pang-Ning Tan, Michael Steinbach and Vipin Kumar “Introduction to Data Mining”, Pearson Education,2005.*

Reference Books :

1. *Sam Aanhory & Dennis Murray “Data Warehousing in the Real World” , Pearson EdnAsia.*
2. *K.P.Soman, S.Diwakar, V.Ajay ,”Insight into Data Mining”, PHI,2008.*
3. *Ralph Kimball Wiley “The Data Warehouse Life cycle Tool kit”,student edition.*
4. *William H Inmon, John Wiley & Sons Inc “Building the Data Warehouse”, 2005.*
5. *Margaret H Dunham “Data Mining Introductory and advanced topics”, Pearsoneducation.*
6. *Arun K Pujari “Data Mining Techniques”, 2nd edition, UniversitiesPress.*

Course Outcomes :

After completion of the course, student should be able to:

1. *Understandoperationaldatabase,warehousingandmultidimensionalneed of data base to meet industrialneeds.*
2. *Apply the association rules for mining thedata.*
3. *Design and deploy appropriate classificationtechniques.*
4. *Clusterthehighdimensionaldataforbetterorganizationofthedata.*
5. *Compare and contrast the dominant skill development in data miningalgorithms.*

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(UGC-AUTONOMOUS)

(J7542) NETWORK PROGRAMMING

(Professional Elective-IV)

B.Tech. IV YearI-SEMCSE **L T P C2 1 03**

Course Objectives :

1. *To understands the use of client/server architecture in application development.*
2. *To understand and use elementary socket system calls, advanced socket systemcalls.*
3. *To understand how to use TCP and UDP basedsockets.*
4. *To organize and manipulate files anddirectories.*
5. *To explain inter process communication consisting of pipes, FIFOs, Semaphores and messageQueues.*

Syllabus:

UNIT-I:

Introduction to Network Programming: *OSI model, UNIX standards, TCP and UDP & TCP connection establishment and Format, Buffer sizes and limitation, standard internet services, Protocol usage by common internet application.*

UNIT-II

Sockets: *Address structures, value – result arguments, Byte ordering and manipulationfunctionandrelatedfunctions.ElementaryTCPsockets–Socket, connect, bind, listen, accept, fork and exec function, concurrent servers. Close function and relatedfunction.*

UNIT-III

TCP client server: *Introduction, TCP Echo server functions, Normal startup, terminate and signal handling server process termination, Crashing and Rebooting of server host. shutdown of server host.*

I/OMultiplexingandsocketoptions:*I/OModels,selectfunction,Batchinput, shutdown function, TCP Echo server, getsockopt and setsockopt functions. Socketstates,GenericsocketoptionIPV6socketoption,ICMPV6socketoption, IPV6 socket option and TCP socketoptions.*

UNIT-IV

Elementary UDP sockets: *Introduction UDP Echo server function, lost datagram, Lack of flow control with UDP, determining outgoing interface with UDP.*

Elementary name and Address conversions: *DNS, gethost by Name function, Resolver option, Function and IPV6 support, uname function.*

UNIT-V

IPC:*Introduction,Fileandrecordlocking,Pipes,FIFOsstreamsandmessages, Name spaces, system IPC, Message queues,Semaphores.*

Remote Login: *Terminal line disciplines, Pseudo-Terminals, Terminal modes, Control Terminals, rlogin Overview, RPC Transparency Issues.*

Text Books :

1. *UNIX Network Programming, Vol. I, Sockets API, 2nd Edition. -W.Richard Stevens, Pearson Edn.Asia.*
2. *UNIX Network Programming, 1st Edition, - W.Richard Stevens.PHI.*

Reference Books :

1. *UNIX Systems Programming using C++ T CHAN,PHI.*
2. *UNIX for Programmers and Users, 3rd Edition Graham GLASS, Kingabls, PearsonEducation.*
3. *Advanced UNIX Programming 2nd Edition M. J. ROCHKIND, Pearson Education.*

Course Outcomes :

Students who complete this course should be able to

1. *Analyse the requirements of a networked programming environment and identify the issues to besolved.*
2. *Createconceptualsolutionstothoseissuesandimplementaprogramming solution.*
3. *Applyseveralcommonprogramminginterfacestonetworkcommunication.*
4. *Understand the use of TCP/UDPSockets.*
5. *Apply advanced programming techniques such as Broadcasting, Multicasting.*

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J7543) SECURE SOFTWARE ENGINEERING

(Professional Elective-IV)

B.Tech. IV YearI-SEMCSE **L T P C2**
1 03

Course Objectives :

This course will develop students' knowledge in/on …

1. *Specification and design of securesoftware.*
2. *Secure software engineeringpractices.*
3. *Testing security levels of ansoftware.*
4. *Secure Systems assemblingchallenges.*
5. *Managing securesoftware's.*

Syllabus:

UNIT-I

SoftwareSecurityIssues:*introduction,theproblem,SoftwareAssuranceand SoftwareSecurity,Threatstosoftwaresecurity,Sourcesofsoftwareinsecurity, Benefits of Detecting SoftwareSecurity.*

Secure Software Properties: *Properties of Secure Software, Influencing the security properties of Software, Asserting and specifying the desired security properties.*

UNIT-II

Requirements engineering for secure software: *Introduction, the SQUARE process Model, Requirements elicitation and prioritization.*

Secure Software Architecture and Design: *Introduction, software security practices for architecture and design, Architectural risk analysis.*

UNIT-III

Knowledge for secure software design: *security principles, security guidelines and attack patterns.* **Secure coding and Testing:** *Code analysis, Software Security testing, Security testing, Considerations throughput the SDLC.*

UNIT –IV

Secure Systems Assembling Challenges: *introduction, security failures, functional and attacker perspectives for security analysis, system complexity drivers and security.*

UNIT –V

Managing Secure Software's: *Governance and security, Adopting an enterprisesoftwaresecurityframework,decidinghowmuchsecurityisenough, Security and project management, Maturity ofPractices.*

Text Books :

*JuliaH.Allen,NancyR.Mead,SeanJ.Barnum,RobertJ.Ellison,Gary,"Software Security Engineering: A Guide for Project Managers**",** Addison Wesley, FirstEdition, ISBN 978-0- 321-50917,2004.*

Reference books :

1. *Jason Grembi, "Developing Secure Software", Cengage Learning, First Edition**,**ISBN:9788131508886,2009.*
2. *RichardSinn,"SoftwareSecurity",CengageLearning,FirstEdition,ISBN: 142831945X,2008.*

Course Outcomes :

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

1. *Explain the specification and design of securesoftware.*
2. *Adopt secure software practices for applicationdevelopment.*
3. *Test security levels of ansoftware.*
4. *Identify Secure Systems assemblingchallenges.*
5. *Mange securitysoftware's.industry*

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J7544) PATTERN RECOGNITION
(Professional Elective-IV)

B.Tech. IV YearI-SEMCSE **L T P C2**
1 03

Course Objectives *:*

1. *To introduce the students about fundamentals of imageformation.*
2. *To introduce students the major ideas, methods, and techniques of computer vision and patternrecognition.*
3. *To develop an appreciation for various issues in the design of computer vision and object recognitionsystems.*
4. *To provide the students with computer vision and object recognition applications.*
5. *To provide the students with Template matching, classification and clustering.*

Syllabus :

UNIT-I

ClassifiersBasedonBayesDecisionTheory:*Introduction,BayesDecision Theory,DiscriminantFunctionsandDecisionSurfaces,BayesianClassification for NormalDistributions.*

Estimation of Unknown Probability Density Functions: Maximum Likelihood Parameter Estimation , Maximum a Posteriori Probability Estimation, Bayesian Inference, Maximum Entropy Estimation, Mixture Models, Nonparametric Estimation,The Naive-Bayes Classifier, The Nearest Neighbor Rule, Bayesian Networks.

UNIT-II

Linear Classifiers: *Linear Discriminant Functions and Decision Hyperplanes, the Perceptron Algorithm, Least Square Methods.*
Mean Square Estimation Revisited: Logistic Discrimination, Support Vector Machines.

UNIT-III

NonLinearClassifiers:*TheXORProblem,TheTwo-LayerPerceptron,Three LayerPerceptrons.*

Algorithms Based on Exact Classification of the Training Set: The Backpropagation Algorithm , Variations on the Backpropagation Theme, The Cost Function Choice, Choice of the Network Size, A Simulation Example, Networks with Weight Sharing, Generalized Linear Classifiers, Capacity of the *l-DimensionalSpaceinLinearDichotomies,PolynomialClassifiers,RadialBasis Function Networks, UniversalApproximators.*

Support Vector Machines: The nonlinear Case, Decision Trees, Combining Classifiers, and The Boosting Approach to Combine Classifiers.

UNIT-IV

Feature Selection: *Preprocessing, Feature Selection Based on Statistical Hypothesis Testing, The Receiver Operating Characteristics (ROC) Curve , Class Separability Measures , Feature Subset Selection , Optimal Feature Generation,NeuralNetworksandFeatureGeneration/Selection,TheBayesian InformationCriterion.*

FeatureGeneration:*LinearTransformsRegionalFeatures,FeaturesforShape andSizeCharacterization,TypicalFeaturesforSpeechandAudioClassification.*

UNIT-V

TemplateMatching:*Introduction,SimilarityMeasuresBasedonOptimalPath SearchingTechniques,MeasuresBasedonCorrelations,DeformableTemplate Models.*

Context Dependent Classification: *Markov Chain Models, Hidden Markov Models.*

Clustering Algorithms: *Clustering Algorithms Based on Graph Theory, Competitive Learning Algorithms: Supervised Learning Vector Quantization.*

Text Books :

1. *S Theodoridis and K Koutroumbas ,"Pattern Recognition", 4th Edition, Academic Press,2009.*
2. *CBishop,"PatternRecognitionandMachineLearning",Springer,2006.*

Referenec Books :

1. *Theodoridis & Koutroumbas,* **"***Pattern Recognition***",** *Academic Press, 4th Edition,2014.*

Course Outcomes *:*

After completion of the course, student should be able to:

1. *Understand the fundamentals of imageformation.*
2. *Comprehendthemajorideas,methodsandtechniquesofimageprocessing and computervision.*
3. *Understandtypicalpatternrecognitiontechniquesforobjectrecognition.*
4. *Implementthebasicimageprocessingandcomputervisiontechniques.*
5. *Develop simple object recognition systems and patternclassifiers.and improves employability*

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J7545) MOBILE COMPUTING
(Professional Elective-V)

B.Tech. IV YearI-SEMCSE **L T P C2**
1 03

Course Objectives :

1. *Understand and identify the GSM, GPRS and Bluetooth software model for mobilecomputing.*
2. *Understand, analyze and explain problems associated to localization and movements, the wireless and wired communication architecture, handling of data and business application over slow wirelessnetworks.*
3. *Understand and identify business data management and security issues over slow wirelessmedia.*
4. *Understand, analyze and explain working of software mobile agents over longdistances,transactionprocessingoverwireandwirelessmedia.*
5. *Understand CDMA, communication protocols and QoS over wire and wirelesschannels.*

Syllabus :

UNIT I

Introduction: *History of wireless communication, Applications, Wireless transmission. Frequencies for radio transmission, Regulations, Signals, Antennas,Signalpropagation,Multiplexing,Spreadspectrum,CellularSystems*

UNIT II

Medium access control*: motivation for a specialized MAC, SDMA, FDMA, TDMA,* **CDMA Telecommunication Systems***: GSM, GPRS, DECT.*

Satellite Networks – *Applications, Basics, Routing, Localization, Handover, Examples.*

UNIT III

Broadcast Systems: *DAB, DVB.*

Wireless LAN: *IEEE 802.11, Architecture, services, MAC, Physical layer.IEEE 802.11a , 802.11 b standards ,HIPERLAN , Bluetooth.*

UNIT IV

Mobile IP, Dynamic Host Configuration Protocol, Routing in MANETs – Routing, DSDV, DSR, Alternative metrics, Overview ad-hoc routing protocols.

UNIT V

Traditional TCP – Classical TCP improvements – WAP, and WAP 2.0., File Systems and Mobility Management, Windows CE, Palm OS, Symbian OS.

Text Books :

1. *Jochen H. Schiller, "Mobile Communications", Addison Wesley, Second Edition,2003.*
2. *William Stallings, "Wireless Communications and Networks", PHI/Pearson Education,2002.*

Reference Books :

1. *Asoke K Talukder, et al, "Mobile Computing", Tata McGraw Hill,2008.*
2. *Raj Kamal, "Mobile Computing", Oxford Universitypress.*

Course Outcomes :

After completion of the course, student should be able to:

1. *Understand working, characteristics and limitations of mobile hardware devices including their user-interfacemodalities.*
2. *Understandandlearnfrequencyband,spectrum,airinterfaceandchannel structure.*
3. *Understand the necessary knowledge of cellular communication, infrastructure-lessnetworks.*
4. *Analyze TCP, MAC protocols and their technicalfeasibility.*
5. *Understand and implement the hardware components/architectures/ databases/operating system of mobile networks that is necessary to built selfconfidencetodevelopnovelproductsandsolutionsforrealworld.*

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J7547) CLOUD COMPUTING
(Professional Elective-V)

B.Tech. IV YearI-SEMCSE **L T P C2**
1 03

Course Objectives :

1. *To impart the fundamentals and essentials of CloudComputing.*
2. *To provide students a sound foundation of the Cloud Computing so that they can adopt Cloud Computing services and tools in their real life scenarios.*
3. *To provide knowledge about secutrity and privacy issues related to cloud computingenvironments.*
4. *To enable students explore cloud computing driven commercial systems such as Google App Engine, Microsoft Azure and Amazon Web Services andothers.*
5. *To Provide Knowledge about Cloud Programming,Software Environments and basic standards in cloudcomputing.*

Syllabus :

UNIT I

Introduction to Cloud Computing*: Cloud Computing in a Nutshell, System Models for Distributed and Cloud Computing, Roots of Cloud Computing, Grid and Cloud, Layers and Types of Clouds, Desired Features of a Cloud, Basic Principles of Cloud Computing, Challenges and Risks, Service Models.*

UNIT II

Virtual Machines and Virtualization of Clusters and Data Centers*: Levels ofVirtualization,VirtualizationStructures//ToolsandMechanisms,Virtualization ofCPU,MemoryandI/ODevices,VirtualClustersandResourceManagement, Virtualization Data-CenterAutomation.*

Case studies: *Xen Virtual machine monitors- Xen API. VMware - VMware products-Vmware Features. Microsoft Virtual Server - Features of Microsoft Virtual Server.*

UNIT III

CloudcomputingarchitecturesoverVirtualizedDataCenters:*Data-Center design and Interconnection networks, Architectural Design of Compute and Storage Clouds, Public Cloud Platforms, GAE, AWS, Azure, Inter-cloud ResourceManagement.*

UNIT IV

Cloud Security and Trust Management, Data Security in the Cloud : *An Introduction to the Idea of Data Security, The Current State of Data Security in* *the Cloud, CryptDb:Onion Encryption layers-DET,RND,OPE,JOIN,SEARCH, HOM, and Homomorphic Encryption, FPE.Trust, Reputation and Security Management.*

UNIT V

Cloud Programming and Software Environments: *Features of Cloud and GridPlatforms,parallelanddistributedProgrammingParadigms,Programming Support of Google App Engine, Programming on Amazon AWS and Microsoft Azure, Emerging Cloud SoftwareEnvironments.*

Common Standards in Cloud Computing: *The Open Cloud Consortium, the Distributed Management Task Force, Standards for Application Developers, and Standards for Messaging. Internet Messaging Access Protocol (IMAP), Standards for Security, Examples of End-User Access to Cloud Computing.*

Text Books :

1. *John W. Rittinghouse, "Cloud Computing: Implementation, Management, and Security ". James F. Ransome, CRC Press2009.*
2. *KaiHwang.GeoffreyC.Fox,JackJ.Dongarra,"DistributedandCloudComputing FromParallelProcessingtotheInternetofThings",Elsevier,2012.*
3. *Rajkumar Buyya, James Broberg and Andrzej M. Goscinski," Cloud Computing: Principles and Paradigms (Wiley Series on Parallel and Distributed Computing), Wiley Publishing©2011.*

Reference Books :

1. *Raluca Ada Popa, Catherine M.S. Redfield, Nickolai Zeldovich, and Hari Balakrishnan, "CryptDB: Protecting Confidentiality with encrypted Query Processing"23rdACMSymposiumonOperatingSystemsPrinciples(SOSP 2011), Cascais, Portugal October2011.*
2. *A Fully Homomorhic Encryption Scheme, Craig Gentry, September2009.*
3. *DavidMarshall,WadeA.Reynolds,"AdvancedServerVirtualization:VMware andMicrosoftPlatformintheVirtualDataCenter",AuerbachPublications,2006.*
4. *Webresources:*

a. *http://aws.amazon.com*

b. *http://code.google.com/appsengine*

c. *http://www.buyya.com/*

Course Outcomes :

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

1. *Assess the knowledge and the important role of cloud computing in the development of variousapplications.*
2. *Describe the of various services offered in cloudcomputing.*
3. *Summarize the knowledge of underlying technologies used in cloud computing.*
4. *Identifythesecurityrelatedissuesinvolvedincloudcomputing.*
5. *Identify the common standards in cloudcomputing.*

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(UGC-AUTONOMOUS)

(J7548) SOFTWARE TESTING METHODOLOGIES

(Professional Elective-V)

B.Tech. IV YearI-SEMCSE **L T P C2**
1 03

Course Objectives :

1. *To study fundamental concepts in software testing, including software testing objectives, process, criteria, strategies, andmethods.*
2. *To learnhowtoplanningatestproject,designtestcasesanddata,conduct testing operations, manage software problems and defects, generate a testingreport.*
3. *To expose the advanced software testing topics, such as object-oriented software testing methods, and component-based software testing issues, challenges, andsolutions.*
4. *Togainsoftwaretestingexperiencebyapplyingsoftwaretestingknowledge and methods to practice-oriented software testingprojects.*
5. *To understand software test automation problems andsolutions.*

Syllabus:

UNIT-I

Introduction:- *Purpose of testing, Dichotomies, model for testing, consequences of bugs, taxonomy of bugs.*

Flow graphs and Path testing:- *Basics concepts of path testing, predicates, path predicates and achievable paths, path sensitizing, path instrumentation, application of path testing.*

UNIT-II

Transaction Flow Testing:-*transaction flows, transaction flow testing techniques.*

Dataflow testing: - *Basics of dataflow testing, strategies in dataflow testing, application of dataflow testing.*

UNIT-III

Domain Testing:-domains and paths, Nice & ugly domains, domain testing, domains and interfaces testing, domain and interface testing, domains and testability.

UNIT-IV

Paths, Path products and Regular expressions:- *path products & path expression, reduction procedure, applications, regular expressions & flow anomaly detection.*

LogicBasedTesting:-*overview,decisiontables,pathexpressions,kvcharts, specifications.*

UNIT-V

State,StateGraphsandTransitiontesting:-*stategraphs,good&badstate graphs, state testing, Testability tips. Graph Matrices and Application:- Motivational overview, matrix of graph, relations, power of a matrix, node reduction algorithm, building tools. (Student should be given an exposure to a tool like JMeter orWin-runner).*

Text Books :

1. *Software Testing techniques – Baris Beizer, Dreamtech, secondedition.*
2. *Software Testing Tools – Dr.K.V.K.K.Prasad,Dreamtech.*

Reference Books :

1. *The craft of software testing – Brian Marick, PearsonEducation.*
2. *Software Testing Techniques –SPD(Oreille).*
3. *Software Testing in the Real World – Edward Kit,Pearson.*
4. *Effective methods of Software Testing, Perry, JohnWiley.*
5. *Art of Software Testing – Meyers, JohnWiley.*

Course Outcomes :

By the end of the course, the student should :

1. *Have an ability to apply software testing knowledge and engineering methods.*
2. *Haveanabilitytodesignandconductasoftwaretestprocessforasoftware testingproject.*
3. *Haveanabilitytoidentifytheneedsofsoftwaretestautomation,anddefine and develop a test tool to support testautomation.*
4. *Have an ability to understand various software testingproblems.*
5. *Have an ability to identify and solve these problems by designing and selectingsoftwaretestmodels,criteria,strategies,andmethods.*

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(UGC-AUTONOMOUS)

(J7549) DATA MINING LAB

B.Tech. IV YearI-SEMCSE **L T P C**
0 4 2

Course Objectives :

1. *Practicalexposureonimplementationofwellknowndataminingtasks.*
2. *Exposuretoreallifedatasetsforanalysisandprediction.*
3. *Learningperformanceevaluationofdataminingalgorithmsinasupervised and an unsupervisedsetting.*
4. *Handlingasmalldataminingprojectforagivenpracticaldomain.*
5. *Attheendtocompareandcontrastdifferentconceptionsofdatamining.*

LIST OF EXPERIMENTS :

Week 1: *Introduction to WEKA.*

Week 2: *Implementation of measures of proximity.*

Week 3: *Implementation of pre-processing using WEKA.*

Week 4: *Learning Of Remove Attributes From Pre-processing Using REMOVE Filter.*

Week 5: *Implementation of Apriori Algorithm for Association rule Mining.*

Week 6: *Learning and implementing k-means clustering*

Week 7: *Learning Naïve and Decision Tress classifier in WEKA*

Week 8: *Learning Bayesian modelling and Inference in Netica*

Week 9: *Learning About Attribute Discritization.*

Reference Books :

1. *IntroductiontoDataMiningPang-NingTan,MichaelSteinbach,VipinKumar Pearson Education (Addison Wesley), 0-321-32136-7,2006.*
2. *Data Mining with WEKA.http://www.cs.waikato.ac.nz/ml/weka/.*

Course Outcomes :

1. *The data mining process and important issues around data cleaning, pre-processingandintegration.*
2. *The principle algorithms and techniques used in data mining, such as clustering, association mining, classification andprediction.*
3. *To evaluate the different models of OLAP and datapreprocessing.*
4. *To enlist various algorithms used in information analysis of Data Mining Techniques.*
5. *To demonstrate the knowledge retrieved through solvingproblems.*

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J7550) NETWORK PROGRAMMING LABORATORY

B.Tech. IV YearI-SEMCSE **L T P C0 0 42**

Course Objectives :

1. *To teach students various forms of IPC through Unix and socket Programming.*
2. *To understand the use of client/server architecture in application development.*
3. *To understand and use elementary socket system calls, advanced socket system calls and Java SocketAPI.*
4. *To understand how to use TCP and UDP basedsockets.*
5. *To implement RPC, application layerprotocols.*

LIST OF EXPERIMENTS :

Week1:

Implement the following forms ofIPC.

a. *Pipes*
b. *FIFO*

Week 2:

Implement file transfer using Message Queue form of IPC.

Week 3:

Writeaprogrammetocreateanintegervariableusingsharedmemoryconcept andincrementthevariablesimultaneouslybytwoprocesses.Usesemaphores to avoid raceconditions.

Week 4:

Design TCP iterative Client and server application to reverse the given input sentence.

Week 5:

Design TCP iterative Client and server application to reverse the given input sentence.

Week 6:

Design TCP client and server application to transfer file.

Week 7:

Design a TCP concurrent server to convert a given text into upper case using multiplexing system call "select".

Week 8:

Design UDP Client and server application to reverse the given input sentence.

Week 9:

Design UDP Client server to transfer a file.

Week 10:

Design a RPC application to add and subtract a given pair of integers.

Reference Books :

1. *Advance Unix Programming Richard Stevens, Second Edition Pearson Education.*
2. *Advance Unix Programming, N.B. Venkateswarlu, BSPublication.*

Course Outcomes :

Students who complete this course should be able to

1. *Use network programming concepts to develop and implement distributed applications.*
2. *Develop and implement next generation protocols required for emerging applications.*
3. *Model and evaluate performance of networkingsystems.*
4. *Analyze Network traffic using monitoringtools.*
5. *Implement File transfer protocol, remote login using pseudo terminal and RPC.*

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J8559) SEMANTIC WEB AND SOCIAL NETWORKS
(Professional Elective-VI)

B.Tech. IV YearII-SEMCSE **L T P C2**
1 03

Course Objectives :

1. *To learn WebIntelligence.*
2. *To learn Knowledge Representation for the SemanticWeb.*
3. *To learn Ontology Engineering.*
4. *To learn Semantic Web Applications, Services andTechnology.*
5. *To learn Social Network Analysis and semanticweb.*

Syllabus:

UNIT –I

Web Intelligence Thinking and Intelligent Web Applications, The Information Age ,The World Wide Web, Limitations of Today's Web, The Next Generation Web, Machine Intelligence, Artificial Intelligence, Ontology, Inference engines, SoftwareAgents,BernersLeewww,SemanticRoadMap,Logicthesemantic Web.

UNIT –II

Knowledge Representation for the Semantic WebOntologies and their role in the semantic web, Ontologies Languages for the Semantic Web Resource Description Framework(RDF) / RDF Schema, Ontology WebLanguage(OWL), UML, XML/XMLSchema.

UNIT-III

Ontology EngineeringOntology Engineering, Constructing Ontology, Ontology Development Tools, Ontology Methods, Ontology Sharing and Merging, Ontology Libraries and OntologyMapping, Logic, Rule and Inference Engines.

UNIT- IV

Semantic Web Applications, Services and TechnologySemantic Web applications and services, Semantic Search, elearning, Semantic Bioinformatics,KnowledgeBase,XMLBasedWebServices,CreatinganOWL-SOntologyforWebServices,SemanticSearchTechnology,WebSearchAgents and SemanticMethods.

UNIT-V

Social Network Analysis and semantic web,What is social Networks analysis, development of the social networks analysis, Electronic Sources for Network

AnalysisElectronicDiscussionnetworks,BlogsandOnlineCommunities,Web Based Networks. Building Semantic Web Applications with social network features.

Text Books :

1. *Thinking on the Web Berners Lee, Godel and Turing, Wiley inter science, 2008.*
2. *Social Networks and the Semantic Web, Peter Mika, Springer,2007.*

Reference Books :

1. *Semantic Web Technologies, Trendsand Research in Ontology Based Systems, J.Davies, R.Studer, P.Warren, John Wiley&Sons.*
2. *Programming the Semantic Web, T.Segaran, C.Evans, J.Taylor, O'Reill y, SPD.*

Course Outcomes :

1. *Demonstrateknowledgeandbeabletoexplainthethreedifferent"named" generations of theweb.*
2. *Demonstrate the ability to anticipate materially in projects that develop programs relating toWeb applications and the analysis of Web data.*
3. *Be able to understand and analyze key Web applications including search engines and social networkingsites.*
4. *Be able to understand and explain the key aspects of Web architecture and why these are important to the continued functioning of the World WideWeb.*
5. *Be able to analyze and explain how technical changes affect the social aspects of Web-basedcomputing.*

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(UGC-AUTONOMOUS)

(J8560) E-COMMERCE

(Professional Elective-VI)

B.Tech. IV YearII-SEMCSE **L T P C2**
1 03

Course Objectives :

1. *To develop an understanding of scope ofE-Commerce.*
2. *To develop an understanding of electronic market and marketplace.*
3. *To develop an understanding of businessmodels.*
4. *To develop an understanding of legal issues, threats ofE-Commerce.*
5. *Identify and discuss management issues underlying e-Commerce issues includingorganizationalstructure,strategicplanning,goalsetting,corporate social responsibility, international arena, changing market intermediaries, resource allocation and customerservice.*

Syllabus :

UNIT -I

Electronic Commerce-Frame work, anatomy of E-Commerce applications, E-CommerceConsumer applications, E-Commerce organization applications.Consumer Oriented Electronic commerce Mercantile Process models.

UNIT - II

Electronicpaymentsystems-DigitalToken-Based,SmartCards,CreditCards, Risks in Electronic Payment systems.Inter Organizational Commerce - EDI, EDI Implementation, Value addednetworks.

UNIT - III

Intra Organizational Commerce - work Flow, Automation Customization and internal Commerce, Supply chain Management.Corporate Digital Library - Document Library,digital Document types, corporate Data Warehouses.

UNIT- IV

Advertising and Marketing - Information based marketing, Advertising on Internet, on-line marketing process, market research. Consumer Search and ResourceDiscovery-InformationsearchandRetrieval,CommerceCatalogues, InformationFiltering.

UNIT - V

Multimedia-keymultimediaconcepts,DigitalVideoandelectronicCommerce, Desktop video processings, Desktop videoconferencing.

Text Book *:*

Frontiers of electronic commerce – Kalakata, Whinston, Pearson.

Reference Books :

1. *E-CommercefundamentalsandapplicationsHendryChan,RaymondLee, Tharam Dillon, Ellizabeth Chang, JohnWiley.*
2. *E-Commerce, S.Jaiswal –Galgotia.*
3. *E-Commerce, Efrain Turbon, Jae Lee, David King, H.MichaelChang.*

Course Outcomes :

1. *Students would be able to analyze the concept of electronic market and marketplace.*
2. *Students would be able to understand the businessmodels.*
3. *Students would be able to understand the businessstandards.*
4. *Explain basic Electronic Commercefunctions.*
5. *Studentswouldbeabletounderstandthelegalandsecurityissues.*

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J8561) SOFTWARE PROJECT MANAGEMENT
(Professional Elective-VI)

B.Tech. IV YearII-SEMCSE **L T P C2**
1 03

Course Objectives :

1. *Understand the fundamental principles of Software Project management & will also have a good knowledge of responsibilities of project manager and how to handlethese.*
2. *Be familiar with the different methods and techniques used for project management.*
3. *By the end of this course student will have good knowledge of the issues and challenges faced while doing the Software project Management and will also be able to understand why majority of the software projects fails and how that failure probability can be reducedeffectively.*
4. *Will be able to do the Project Scheduling, tracking, Risk analysis, Quality managementandProjectCostestimationusingdifferenttechniques.*
5. *Develop the skills for tracking and controlling softwaredeliverables.*

Syllabus :

UNIT- I

Conventional Software Management: *The waterfall model, conventional softwareManagementperformance.EvolutionofSoftwareEconomics:Software Economics. Pragmatic software costestimation.*

UNIT- II

Improving Software Economics: *Reducing Software product size, Improving software processes, improving team effectiveness. Improving automation, Achieving required quality, peer inspections. The old way and the new- The principles of conventional software engineering. Principles of modem software management, transitioning to an iterative process.*

UNIT- III

Lifecyclephases*:Engineeringandproductionstages,inception.Elaboration, construction, transition phases. Artifacts of the process: The artifact sets. Management artifacts, Engineering artifacts, programmatic artifacts. Model based software architectures: A Management perspective and technical perspective.*

UNIT- IV

WorkFlowsoftheprocess:*Softwareprocessworkflow,Intertransworkflows. Checkpoints of the Process: Major Mile Stones, Minor Milestones, Periodic status assessments. Iterative Process Planning Work breakdown structures, planning guidelines, cost and scheduled estimating, Interaction, planning process, Pragmaticplanning.*

Project Organizations and Responsibilities : Line-of-Business Organizations, Project Organizations, evolution of Organizations.Process Automation: Automation Budding Blocks. The Project Environment.

UNIT-V

Project Control and Process instrumentation: *The server care Metrics, Managementindicators,andqualityindicators.lifecycleexpectationspragmatic Software Metrics, Metrics automation. Tailoring the Process: Process discriminates,Example.FutureSoftwareProjectManagement:ModemProject ProfilesNextgenerationSoftwareeconomicsmodemProcesstransitions.*

Case Study: *The Command Center Processing and Display System. Replacement (CCPDS. R).*

Text Books :

1. *Software Project Management. Walker Royce, PearsonEducation.*
2. *SoftwareProjectManagement,BobHughes&MikeCotterell,fourthedition, Tate McGrawHd.*

Reference Books :

1. *AppliedSoftwareProjectManagement,AndrewSteIbian8JenniferGreene, O'Reilly. 2006.*
2. *Head First PMP, Jennifer Greene & Andrew Steliman,ORoiHy.2007.*
3. *Software Enneeñg Project Managent. Richard H. Thayer &Edward Yourdon, second edition, Wiley India,2004.*

Course Outcomes :

1. *Describe and determine the purpose and importance of project management from the perspectives of planning, tracking and completion ofproject.*
2. *Compare and differentiate organization structures and projectstructures.*
3. *Implement a project to manage project schedule, expenses andresources with the application of suitable protect managementtools.*
4. *Improve Problem Solving, Critical thinking, Communication and InterpersonalSkills.*
5. *Impart Ethical and ProfessionalResponsibilities.*

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ACADEMIC REGULATIONS
COURSE STRUCTURE
AND
DETAILED SYLLABUS

ELECTRONICS & COMMUNICATION ENGINEERING

For

B.TECH. FOUR YEAR DEGREE COURSE

(Applicable for the batches admitted from 2018-2019)

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

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(AUTONOMOUS)
ELECTRONICS & COMMUNICATION ENGINEERING
COURSE STRUCTURE

(Applicable from the batch admitted during 2018-19 and onwards)

I YEAR **I SEMESTER**

S.No.	Subject code	Subject	Marks		L	T	P	Credits
			Internal	External				
1	J1001	Mathematics-I	30	70	3	1	0	4
2	J1011	English	30	70	2	0	0	2
3	J1204	Network Theory	30	70	3	1	0	4
4	J1501	Programming for Problem Solving	30	70	3	1	0	4
5	J1012	English Language and Communication Skills Lab	30	70	0	0	2	1
6	J1502	Programming for Problem Solving Lab	30	70	0	0	3	1.5
7	J1304	Engineering & IT workshop	30	70	1	0	3	2.5
		Total Credits			**12**	**03**	**08**	**19**

I YEAR **II SEMESTER**

S.No.	Subject code	Subject	Marks		L	T	P	Credits
			Internal	External				
1	J2002	Mathematics-II	30	70	3	1	0	4
2	J2503	Object Oriented Programming	30	70	3	0	0	3
3	J2007	Engineering Physics	30	70	3	1	0	4
4	J2008	Engineering Chemistry	30	70	3	1	0	4
5	J2302	Engineering Graphics	30	70	1	0	4	3
6	J2009	Engineering Physics & Chemistry Lab	30	70	0	0	3	1.5
7	J2504	Object Oriented Programming Lab	30	70	0	0	3	1.5
		Total Credits			**13**	**03**	**10**	**21**

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

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ELECTRONICS & COMMUNICATION ENGINEERING

II YEAR **I SEMESTER**

S.No	Subject code	Subject	Marks		L	T	P	Credits
			Internal	External				
1	J3003	Transforms and Complex Variables	30	70	3	1	0	4
2	J3401	Electronic Devices and Circuits	30	70	3	0	0	3
3	J3208	Electrical Technology	30	70	3	0	0	3
4	J3402	Signals and Systems	30	70	3	0	0	3
5	J3403	Probability Theory and Stochastic Process	30	70	3	0	0	3
6	J3404	Electronic Devices and Circuits Lab	30	70	0	0	3	1.5
7.	J3405	Basic Simulation Lab	30	70	0	0	3	1.5
	J3209	Electrical Technology Lab	30	70	0	0	3	1.5
8	JMC01	**Mandatory Course** : Environmental Science	30	70	3	0	0	0
		Total Credits			**18**	**01**	**09**	**20.5**

II YEAR **II SEMESTER**

S.No	Subject code	Subject	Marks		L	T	P	Credit
			Internal	External				
1	J4406	Analog Communications	30	70	3	0	0	3
2	J4407	Pulse and Digital Circuit	30	70	3	0	0	3
3	J4408	Electronic Circuit Analysis	30	70	3	0	0	3
4	J4409	Digital System Design	30	70	3	0	0	3
5	J4410	Electromagnetic Waves and Transmission Lines	30	70	3	0	0	3
6	J4411	Pulse and Digital Circuits Lab	30	70	0	0	3	1.5
7	J4412	Electronic Circuit Analysis Lab	30	70	0	0	3	1.5
8	J4413	Analog Communications Lab	30	70	0	0	3	1.5
9	JMC02	**Mandatory Course** : (Gender Sensitization)	100	-	3	0	0	0
		Total Credits			**18**	**00**	**09**	**19.5**

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(AUTONOMOUS)

ELECTRONICS & COMMUNICATION ENGINEERING

III YEAR **I SEMESTER**

S.No	Subject code	Subject	Marks		L	T	P	Credits
			Internal	External				
1	J5414	IC Applications	30	70	3	0	0	3
2	J5415	Digital Signal Processing	30	70	3	0	0	3
3	J5455	Digital Communications	30	70	3	0	0	3
4	J5416 J5217 J5418	**Professional Elective – I** 1.Antennas and Wave propagation 2.Power Electronics 3.Bio Medical Electronics	30	70	2	1	0	3
5	J5419	**Open Elective – I**	30	70	3	0	0	3
6	J5420	IC Applications Lab	30	70	0	0	2	1
7	J5421	Digital Signal Processing Lab	30	70	0	0	3	1.5
8	J5456	Digital Communications Lab	30	70	0	0	3	1.5
8	JMC03	**Mandatory Course** (Constitution of India)	30	70	3	0	0	0
9	J5480	**Internship**	100	--	0	0	2	1
		Total Credits			**17**	**01**	**10**	**20**

III YEAR **II SEMESTER**

S.No	Subject code	Subject	Marks		L	T	P	Credits
			Internal	External				
1	J6422	Linear Control Systems	30	70	3	0	0	3
2	J6423	VLSI Technology	30	70	3	0	0	3
3	J6424	Microprocessors & Microcontrollers	30	70	3	0	0	3
4	J6425	Electronic Measurements and Instrumentation	30	70	3	0	0	3
5	J6426 J6427 J6428	**Professional Elective- II** 1. Information Theory and Coding 2. Speech and Audio Processing 3. Nano Electronics	30	70	3	0	0	3
6		**Open Elective – II**	30	70	3	0	0	3
7	J6429	e-CAD & VLSI Lab	30	70	0	0	2	1
8	J6430	Microprocessors and Microcontrollers Lab	30	70	0	0	2	1
		Total Credits			**17**	**1**	**4**	**20**

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(AUTONOMOUS)

ELECTRONICS & COMMUNICATION ENGINEERING

COURSE STRUCTURE

IV YEAR **I SEMESTER**

S.No	Subject code	Subject	Marks		L	T	P	Credits
			Internal	External				
1	J7431	Microwave and Optical Communications	30	70	2	1	0	3
2	J7526	Computer Networks	30	70	3	0	0	3
3	J7432 J7433 J7434	**Professional Elective – III** 1.Adaptive Signal Processing 2.Mobile Communication Networks 3.Image and Video Processing	30	70	3	0	0	3
4	J7435 J7436 J7437	**Professional Elective – IV** 1. High Speed Electronics 2. Wavelet 3. Embedded systems	30	70	3	0	0	3
5	J7438 J7439 J7440	**Professional Elective – V** 1. Error Correcting Codes 2. Introduction to MEMS 3. RF circuit Design	30	70	3	0	0	3
6	J7441	Microwave & Optical Fiber Communication Lab	30	70	0	0	2	1
7	J7481	Mini project	100	--	0	0	8	4
		Total Credits			**14**	**1**	**10**	**20**

IV YEAR **II SEMESTER**

S.No	Subject code	Subject	Marks		L	T	P	Credits
			Internal	External				
1	J8443 J8444 J8445	**Professional Elective- VI** 1. CMOS Design 2. Scientific Computing 3. Radar Systems	30	70	3	0	0	3
2	J8446 J8447 J8448	**Professional Elective – VII** 1. Mixed Signal Design 2. Wireless sensor Networks 3. Satellite Communication	30	70	3	0	0	3
3		**Open Elective – III**	30	70	3	0	0	3
4	J8482	**Technical Seminar**	100	--	0	0	2	1
5	J8483	**Comprehensive Viva-Voce**	100	--	0	0	4	2
6	J8484	**Major project**	30	70	0	0	16	8
		Total Credits			**09**	**0**	**22**	**20**
7	J8485	**NSS***			0	0	0	2*

*** Academic Regulations, Item No 1(ii) for NSS**

List of Open Electives offered by Dept.of ECE

S.No	Course Code	Name of the Open Elective	Credits	Preferred Semester
1.	J4410	Electromagnetic Waves and Transmission Lines	3	III/IV
2.	J4409	Digital System Design	3	III/IV
3.	J3402	Signals and Systems	3	III/IV
4.	J5419	Computer Organization	3	V/VI
5.	J5420	IC Applications	3	V/VI
6.	J5415	Digital Signal Processing	3	V/VI
7.	J6424	Microprocessors and Microcontrollers	3	V/VI
8.	J6422	Linear Control Systems	3	V/VI
9.	J5462	Microprocessors and Interfacing	3	V/VI
10.	J7437	Embedded Systems	3	VII/VIII
11.	J8447	Wireless Sensor Networks	3	VII/VIII
12.	J5418	Bio medical Electronics	3	VII/VIII
13.	J7434	Image and Video Processing	3	VII/VIII

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(AUTONOMOUS)

ELECTRONICS & COMMUNICATION ENGINEERING

PROFESSIONAL ELECTIVES

S.No	Subject Code	Professional Elective	Credits	Preferred semester
1.	J5416 J5217 J5418	**Professional Elective – I** 1. Antennas and Wave propagation 2. Power Electronics 3. Bio Medical Electronics	3	V
2.	J6426 J6427 J6428	**Professional Elective- II** 1. Information Theory and Coding 2. Speech and Audio Processing 3. Nano Electronics	3	VI
3.	J7432 J7433 J7434	**Professional Elective – III** 1. Adaptive Signal Processing 2. Mobile Communication Networks 3. Image and Video Processing	3	VII
4.	J7435 J7436 J7437	**Professional Elective – IV** 1. High Speed Electronics 2. Wavelet 3. Embedded systems	3	VII
5.	J7438 J7439 J7440	**Professional Elective – V** 1. Error Correcting Codes 2. Introduction to MEMS 3. RF circuit Design	3	VII
6.	J8443 J8444 J8445	**Professional Elective- VI** 1. CMOS Design 2. Scientific Computing 3. Radar Systems	3	VIII
7.	J8446 J8447 J8448	**Professional Elective – VII** 1. Mixed Signal Design 2. Wireless sensor Networks 3. Satellite Communication	3	VIII

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(AUTONOMOUS)
Narsampet, Warangal.

(J1001)MATHEMATICS - I

B.Tech. I Year I Sem: Common to All Branches **L T P C**
3 1 0 4

Objectives: To learn

- Types of matrices and their properties.
- Concept of a rank of the matrix and applying this concept to know the consistency and solving the system of linear equations.
- Concept of eigenvalues and eigenvectors and to reduce the quadratic form to canonical form
- Concept of Sequence.
- Concept of nature of the series.
- Geometrical approach to the mean value theorems and their application to the mathematical problems
- Evaluation of surface areas and volumes of revolutions of curves.
- Evaluation of improper integrals using Beta and Gamma functions.
- Partial differentiation, concept of total derivative
- Finding maxima and minima of function of two and three variables

UNIT-I: Matrices

Matrices: Types of Matrices, Symmetric; Hermitian; Skew-symmetric; Skew-Hermitian; orthogonal matrices; Unitary Matrices; rank of a matrix by Echelon form and Normal form, Inverse of Non-singular matrices by Gauss-Jordanmethod; System of linear equations;solving system of Homogeneous and Non-Homogeneous equations. Gauss elimination method; Gauss Seidel Iteration Method.

UNIT-II: Eigen values and Eigen vectors

Linear Transformation and Orthogonal Transformation: Eigen values and Eigenvectors and their properties: Diagonalization of a matrix; Cayley-Hamilton Theorem (without proof); finding inverse and power of a matrix by Cayley-Hamilton Theorem; Quadratic forms and Nature of the Quadratic Forms; Reduction of Quadratic form to canonical forms by Orthogonal Transformation.

UNIT-III: Sequences & Series

Sequence: Definition of a Sequence, limit; Convergent, Divergent and Oscillatory sequences. Series: Convergent, Divergent and Oscillatory Series; Series of positive terms; Comparison test, p-test, D-Alembert‘s ratio test; Raabe‘s test; Cauchy‘s Integral test; Cauchy‘s root test; logarithmic test. Alternating series: Leibnitz test; Alternating Convergent series: Absolute and Conditionally Convergence.

UNIT-IV: Calculus

Mean value theorems: Rolle‘s theorem, Lagrange‘s Mean value theorem with their Geometrical Interpretation and applications, Cauchy‘s Mean value Theorem. Taylor‘s Series. Applications of definite integrals to evaluate surface areas and volumes of revolutions of curves (Only in Cartesian coordinates), Definition of Improper Integral: Beta and Gamma functions and their applications.

UNIT-V: Multivariable calculus (Partial Differentiation and applications)

Definitions of Limit and continuity.
Partial Differentiation; Euler‘s Theorem; Total derivative; Jacobian; Functional dependence &independence, Maxima and minima of functions of two variables and three variables using method of Lagrange multipliers.

Course outcomes:

After learning the contents of this paper the student must be able to

- Write the matrix representation of a set of linear equations and to analyse the solution of the system of equations
- Find the Eigen values and Eigen vectors
- Reduce the quadratic form to canonical form using orthogonal transformations.
- Analyse the nature of sequence and series.
- Solve the applications on the mean value theorems.
- Evaluate the improper integrals using Beta and Gamma functions
- Find the extreme values of functions of two variables with/ without constraints.
- **To enhance the skills in application oriented.**

Text Books:

- B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36thEdition, 2010
- Erwin kreyszig, Advanced Engineering Mathematics, 9thEdition, John Wiley &Sons,2006.
- G.B. Thomas and R.L. Finney, Calculus and Analytic geometry, 9thEdition,Pearson, Reprint, 2002.

References

- N.P. Bali and Manish Goyal, A text book of Engineering Mathematics, LaxmiPublications, Reprint, 2008.
- Ramana B.V., Higher Engineering Mathematics, Tata McGraw Hill New Delhi,11thReprint, 2010.

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(AUTONOMOUS)
Narsampet, Warangal.

ENGLISH

B.Tech. I Year I Sem: EEE & ECE	**(J1011)**	**L T P C**
B.Tech. I Year II Sem: ME, CE & CSE	**(J2011)**	**2 0 0 2**

Introduction:

In view of the growing importance of English as a tool for global communication and the consequent emphasis on training students to acquire language skills, the syllabus of English has been designed to develop linguistic, communicative and critical thinking competencies of Engineering students.

In English classes, the focus should be on the skills development in the areas of vocabulary, grammar, reading and writing. For this, the teachers should use the prescribed text for detailed study. The students should be encouraged to read the texts leading to reading comprehension and different passages may be given for practice in the class. The time should be utilized for working out the exercises given after each excerpt, and also for supplementing the exercises with authentic materials of a similar kind, for example, newspaper articles, advertisements, promotional material etc. *The focus in this syllabus is on skill development, fostering ideas and practice of language skills in various contexts and cultures.*

Learning Objectives: The course will help to

a. Improve the language proficiency of students in English with an emphasis on Vocabulary, Grammar, Reading and Writing skills.
b. Equip students to study academic subjects more effectively and critically using the theoretical and practical components of English syllabus.
c. Develop study skills and communication skills in formal and informal situations.

Course Outcomes: Students should be able to

- Use English Language effectively in spoken and written forms.
- Comprehend the given texts and respond appropriately.
- Communicate confidently in various contexts and different cultures.
- **Acquire basic proficiency in English including reading and listening comprehension, writing and speaking skills**.

SYLLABUS
UNIT –I
'The Raman Effect' from the prescribed textbook 'English for Engineers' published by Cambridge University Press.
Vocabulary Building: The Concept of Word Formation --The Use of Prefixes and Suffixes.
Grammar: Identifying Common Errors in Writing with Reference to Articles and Prepositions.
Reading: Reading and Its Importance- Techniques for Effective Reading.

Basic Writing Skills: Sentence Structures - Use of Phrases and Clauses in Sentences- Importance of Proper Punctuation- Techniques for writing precisely – **Paragraph writing** –

Types, Structures and Features of a Paragraph - Creating Coherence-Organizing Principles of Paragraphs in Documents.

UNIT –II

'Ancient Architecture in India' from the prescribed textbook 'English for Engineers' published by Cambridge University Press.

Vocabulary: Synonyms and Antonyms.

Grammar: Identifying Common Errors in Writing with Reference to Noun-pronoun Agreement and Subject-verb Agreement.

Reading: Improving Comprehension Skills – Techniques for Good Comprehension

Writing: Format of a Formal Letter-**Writing Formal Letters** E.g.., Letter of Complaint, Letter of Requisition, Job Application with Resume.

UNIT –III

'Blue Jeans' from the prescribed textbook 'English for Engineers' published by Cambridge University Press.

Vocabulary: Acquaintance with Prefixes and Suffixes from Foreign Languages in English to form Derivatives-Words from Foreign Languages and their Use in English.

Grammar: Identifying Common Errors in Writing with Reference to Misplaced Modifiers and Tenses.

Reading: Sub-skills of Reading- Skimming and Scanning

Writing: Nature and Style of Sensible Writing- **Defining- Describing** Objects, Places and Events – **Classifying-** Providing Examples or Evidence

UNIT –IV

'What Should You Be Eating' from the prescribed textbook 'English for Engineers' published by Cambridge University Press.

Vocabulary: Standard Abbreviations in English

Grammar: Redundancies and Clichés in Oral and Written Communication.

Reading: Comprehension**-** Intensive Reading and Extensive Reading

Writing: Writing Practices--Writing Introduction and Conclusion - Essay Writing- Précis Writing.

UNIT –V

'How a Chinese Billionaire Built Her Fortune' from the prescribed textbook 'English for Engineers' published by Cambridge University Press. Vocabulary: Technical Vocabulary and their usage

Grammar: Common Errors in English

Reading: Reading Comprehension-Exercises for Practice

Writing: **Technical Reports**- Introduction – Characteristics of a Report – Categories of Report Formats- Structure of Reports (Manuscript Format) -Types of Reports - Writing a Report.

<u>Prescribed Textbook:</u>

1. **Sudarshana, N.P. and Savitha, C. (2018). English for Engineers. Cambridge University Press.**

<u>References:</u>

1. Swan, M. (2016). Practical English Usage. Oxford University Press.
2. Kumar, S and Lata, P.(2018). Communication Skills. Oxford University Press.
3. Wood, F.T. (2007).Remedial English Grammar. Macmillan.
4. Zinsser, William. (2001). On Writing Well. Harper Resource Book.
5. Hamp-Lyons, L. (2006).Study Writing. Cambridge University Press.
6. Exercises in Spoken English. Parts I –III. CIEFL, Hyderabad. Oxford University Press.

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(AUTONOMOUS)

(J1204) NETWORK THEORY

B.Tech: I Year I Sem: ECE **L T P C**
3 1 0 4

Course objectives:

- To introduce electric circuits and its analysis.
- To impart knowledge on solving circuit equations using network theorems.
- To introduce the phenomenon of resonance in coupled circuits.
- To educate on obtaining the transient response of circuits.
- To introduce Phasor diagrams and analysis of three phase circuits.

UNIT I

BASIC CIRCUITS ANALYSIS
Resistive elements-Ohm‘s Law Resistors in series and parallel circuits–Kirchoffs laws–Mesh current and node voltage-methods of analysis.
Principle of AC voltage waveforms and basic definition, RMS and Average values, Form factor and Peak factor, Concept of reactance, Impedance, susceptance and admittance, Phase and phase difference pharos

UNIT II

NETWORK REDUCTION AND THEOREMS FOR DC AND AC IRCUITS
Network reduction: voltage and current division, source transformation star delta conversion. Thevenins and Norton Theorems , Superposition Theorem–Maximum power transfer theorem–Reciprocity Theorem–Millman's theorem.

UNIT III

TRANSIENT RESPONSE ANALYSIS
L and C elements-Transient response of RL, RC and RLC Circuits using Laplace transform for DC input and A.C. sinusoidal input.

UNIT IV

THREE PHASE CIRCUITS
A.C. circuits–Average and RMS value- Phasor Diagram–Power, Power Factor and Energy.-Analysis of three phase 3-wire and 4-wire circuits with star and delta connected loads, balanced & un balanced–phasor diagram of voltages and currents–power measurement in three phase circuits.

UNIT V

RESONANCE AND COUPLED CIRCUITS
Series and parallel resonance–their frequency response–Quality factor and Bandwidth-Self and mutual inductance –Coefficient of coupling–Tuned circuits–Single tuned circuits.

Course Outcomes:

- Ability to analyse electrical circuits
- Ability to apply circuit theorems
- Ability to analyse transients
- Ability to analyse Three Phase Circuits
- Ability to analyse Resonance And Coupled Circuits
- **To improve his employability**

TEXT BOOKS:

1. William H. Hayt Jr, Jack E. Kemmerly and Steven M. Durbin, –Engineering Circuits Analysis‖, McGraw Hill publishers,edition, New Delhi, 2013.
2. Charles K. Alexander, Mathew N.O. Sadiku, –Fundamentals of Electric Circuits‖,Second Edition, McGraw Hill, 2013.
3. Allan H. Robbins, Wilhelm C. Miller, –Circuit Analysis Theory and Practice‖, Cengage Learning India, 2013.

REFERENCES

1. Chakrabarti A, –Circuits Theory (Analysis and synthesis), Dhanpath Rai & Sons, New Delhi, 1999.
2. Jegatheesan, R., –Analysis of Electric Circuits,‖ McGraw Hill, 2015.
3. Joseph A. Edminister, Mahmood Nahri, ―Electric circuits‖, Schaum's series, McGraw-Hill, New Delhi, 2010.
4. M E Van Valkenburg, –Network Analysis‖,Prentice-Hall of India Pvt Ltd, New Delhi,2015.
5. Mahadevan, K., Chitra, C., –Electric Circuits Analysis,‖ Prentice-Hall of India Pvt Ltd.,New Delhi, 2015.

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(AUTONOMOUS)

(J1501) PROGRAMMING FOR PROBLEM SOLVING

B.Tech : I Year I Sem: ECE,CSE,EEE,	**L T P C**
I Year II Sem: MECH, CIVIL	**4 0 0 4**

Course Objectives:

1. To introduce the basics of computers and information technology.
2. To educate problem solving techniques.
3. To impart programming skills in C language.
4. To practice structured programming to solve real life problems.
5. To study the concepts of Assembler, Macro Processor, Loader and Linker

UNIT-I

History and Classifications of Computers – Components of a Computer – Working Principle of Computer – Hardware – Software and its Types – Applications of Computers –Network and its Types – Internet and its services – Intranet– Extranet – Generations of Programming Languages – Introduction to Number System .

UNIT-II

Problem solving techniques – Program development life-cycle – Algorithm – Complexities of Algorithm – Flowchart – Pseudo code. Introduction to C –C Program Structure – C tokens: Keyword, Identifiers, Constants, Variable, Data types (simple and user-defined) – Operators and its types – Operator Precedence – Expression Evaluation – Type Conversion – Input/output operations.

UNIT-III

Branching Statements – Looping Statements – Arrays – Multidimensional arrays. Functions: Function Prototype, Passing Arguments to Function – Call by Value and Call by Reference – Nested function call – Library Functions – User-defined Functions – Recursion. Strings – String I/O functions, String Library functions – Storage classes

UNIT-IV

Structures – Arrays and Structures – Nested structures – Structure as Argument to functions– Union Pointers – Declaration, Initialization and Accessing Pointer variable – Pointers and arrays – pointers as argument and return value – Pointers and strings - pointers and structures.

UNIT-V

Introduction to File Concepts in C – File types – I/O operations on files – File modes – Random access to files – Command line arguments. Dynamic Memory Allocation: MALLOC, CALLOC, FREE, REALLOC Introduction to preprocessor – Macro substitution directives – File inclusion directives –Compiler Control directives – Miscellaneous directives.

Text Books:

1. J. B. Dixit, –Computer Fundamentals and Programming in C‖, Firewall Media, 2009.
2. Balagurusamy. E, –Programming in ANSI C‖, Tata McGraw Hill, Sixth edition, 2012.

Reference Books:

1. Ashok N Kamthane, –Computer Programming‖, Pearson education, Second Impression, 2008.
2. Venugopal.K and Kavichithra.C, –Computer Programming‖, New Age International Publishers, First Edition, 2007.
3. Byron S Gottfried, –Programming with C‖, Schaum's Outlines, Second Edition, Tata McGraw-Hill, 2006.
4. Dromey R.G., –How to Solve it by Computer‖, Pearson Education, Fourth Reprint, 2007.
5. Kernighan,B.W and Ritchie,D.M, –The C Programming language‖, Second Edition, Pearson Education, 2006.

Course Outcomes:

1. Know the fundamentals of computers
2. Understand applying logical skills for problem solving
3. Learn C programming language concepts
4. Apply C programming language concepts for problem solving
5. Gain knowledge in using memory management techniques in c programming
6. **Computer skills makes far more employable**

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(AUTONOMOUS)
Narsampet, Warangal.

ENGLISH LANUAGE COMMUNICATION SKILLS LAB

		L	T	P	C
B.Tech. I Year-I Sem: ECE & EEE	**(J1012)**				
B.Tech. I Year-II Sem: ME, CE & CSE	**(J2012)**	**0**	**0**	**2**	**1**

The **Language Lab** focuses on the production and practice of sounds of language. It familiarizes the students with the use of English in everyday situations both in formal and informal contexts.

Course Objectives:

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

Learning Outcomes: Students will be able to attain

- Better understanding of nuances of English language through audio- visual experience and group activities
- Neutralization of accent for intelligibility
- **Speaking skills with clarity and confidence which in turn enhances their employability skills**.

Syllabus:

The language Lab shall have two parts:

Computer Assisted Language Learning (CALL) Lab
Interactive Communication Skills (ICS) Lab

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 recognize them, to distinguish between them to mark stress and recognize 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:

- To make students aware of the role of speaking in English and its contribution to their success.
- To enable students to express themselves fluently and appropriately in social and professional contexts.
- Oral practice
- Describing objects/situations/people
- Role play
- 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 and Scanning the text
- Understanding the gist of an argument
- Identifying the topic sentence
- Inferring lexical and contextual meaning
- Understanding discourse features

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

The following course content is prescribed for the Lab.

Exercise – I
CALL Lab:
Understand: Listening Skill- Its importance – Purpose- Process- Types- Barriers of Listening.
Practice: Introduction to Phonetics – Speech Sounds – Vowels and Consonants.
ICS Lab:
Understand: Communication at Work Place- Spoken vs. Written language.
Practice: Ice-Breaking Activity and JAM Session- Situational Dialogues – Greetings – Taking Leave – Introducing Oneself and Others.

Exercise – II
CALL Lab:
Understand: Structure of Syllables – Word Stress and Rhythm– Weak Forms and Strong Forms in Context.
Practice: Basic Rules of Word Accent - Stress Shift - Weak Forms and Strong Forms in Context.
ICS Lab:
Understand: Features of Good Conversation – Non-verbal Communication.
Practice: Situational Dialogues – Role-Play- Expressions in Various Situations –Making Requests and Seeking Permissions - Telephone Etiquette.

Exercise - III
CALL Lab:
Understand: Intonation-Errors in Pronunciation-the Influence of Mother Tongue (MTI).
Practice: Common Indian Variants in Pronunciation – Differences in British and American Pronunciation.
ICS Lab:
Understand: How to make Formal Presentations.
Practice: Formal Presentations.

Exercise – IV
CALL Lab:
Understand: Listening for General Details.
Practice: Listening Comprehension Tests.
ICS Lab:
Understand: Public Speaking – Exposure to Structured Talks.
Practice: Making a Short Speech – Extempore.

Exercise – V
CALL Lab:
Understand: Listening for Specific Details.
Practice: Listening Comprehension Tests.
ICS Lab:
Understand: Interview Skills.
Practice: Mock Interviews.

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Minimum Requirement of infrastructural facilities for ELCS Lab:

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

System Requirement (Hardware component):

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

i) Computers with Suitable Configuration

ii) High Fidelity Headphones

2. Interactive Communication Skills (ICS) Lab: A Spacious room with movable chairs and audio-visual aids with a Public-Address System, a LCD and a projector etc.

Prescribed Lab Manuals:

- *ELCS Lab Manual – A Workbook for CALL and ICS Lab Activities*. Hyderabad, Orient Black Swan Pvt. Ltd. 2016. Print.
- Hart, Steve. Nair, Aravind R. and Bhambhani, Veena. *EMBARK- English for Undergraduates*. Delhi. Cambridge University Press. 2016. Print.

Suggested Software:

- Cambridge Advanced Learner's dictionary with CD, Fourth edition.
- Oxford Advanced Learner's Compass, 8th Edition, with CD.
- Hancock, Mark. *English Pronunciation in Use: Intermediate*. United Kingdom. Cambridge University Press, 2007.
- TOEFL & GRE (KAPLAN, AARCO & BARRONS, USA, Cracking GRE by CLIFFS).

References:

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

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(AUTONOMOUS)

(J1502) PROGRAMMING FOR PROBLEM SOLVING LAB

Common To
B.Tech., I Year I Sem: CSE ,ECE,ME,CE **L T P C**
0 0 3 1.5

Course Objectives:

1.To study and understand the use of OS commands
2.To expose the undergraduate students to the practical implementation of C Programming concepts
3.To improve students capability in applying C Programming for problem solving.
4. To make students use effective memory management techniques in programming
5. To expose students to modular programming concepts in problem solving

Week 1:Study of OS commands
Week 2:Study of Compilation and execution of simple C programs
Week 3. Basic C Programs
a. Arithmetic Operations
b. Area and Circumference of a circle
c. Swapping with and without Temporary Variables
Week 4. Programs using Branching statements
a. To check the number as Odd or Even
b. Greatest of Three Numbers
c. Counting Vowels
d. Grading based on Student‘s Mark
Week 5. Programs using Control Structures
a. Computing Factorial of a number
b. Fibonacci Series generation
c. Prime Number Checking
d. Computing Sum of Digit
Week 6. Programs using String Operations
a. Palindrome Checking
b. Searching and Sorting Names
Week 7. Programs using Arrays
Week 8. Programs using Functions
a. Computing nCr
b. Factorial using Recursion
c. Call by Value and Call by Reference

Week 9. Programs using Structure
a. Student Information System
b. Employee Pay Slip Generation
c. Electricity Bill Generation

Week 10. Programs using Pointers
a. Pointer and Array

b. Pointer to function
c. Pointer to Structure

Week 11. Programs using File Operation
a. Counting No. of Lines, Characters and Black Spaces
b. Content copy from one file to another
c. Reading and Writing Data in File

Text Books:

1. J. B. Dixit, ―Computer Fundamentals and Programming in C‖, Firewall Media, 2009.
2. Balagurusamy. E, ―Programming in ANSI C‖, Tata McGraw Hill, Sixth edition, 2012.

Course Outcomes:
1. Learn practical implementation of C programming language concepts.
2. Debug and document programs in C.
3. **Know usage of logical skills in developing C programs**.
4. Apply effective memory management techniques for problem solving
5. Understand the file management techniques

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS, AFFILIATED TO JNTUH)
(J1304) ENGINEERING & IT WORKSHOP

B.TECH. I YEAR – I SEM: ECE **L T P C**
1 0 3 2.5

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

UNIT – I
TRADES FOR EXERCISES: (Ten exercises are required to perform from the following trades)
1. Carpentry
2. Fitting
3. Tin – Smithy
4. House Wiring
5. Plumbing
6. Soldering

UNIT - II
TRADES FOR DEMONSTRATION & EXPOSURE
1. Demonstration of Power tools
2. Welding.

UNIT – III
IT WORKSHOP I: Computer hardware, identification of parts, Disassembly, Assembly of computer to working condition, simple diagnostic exercises.
IT WORKSHOP II: Installation of operating system windows and Linux simple diagnostic exercises.

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

COURSE OUTCOMES:
The students will be able to
1. **Know the fundamental knowledge of various trades and their skill in real time applications**.
2. Gain knowledge of Welding, Black smithy, Fitting, and house wiring.
3. Understand the basis for analyzing power tools in construction and wood working, electrical engineering and mechanical engineering.
4. Use basic concepts of computer hardware for assembly and disassembly.

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(AUTONOMOUS)

MATHEMATICS-II

(J2002) ODE's and Multivariable Calculus

(Common to all branches)

B.Tech. I Year II Semester

Objectives:

To learn

- Methods of solving the differential equations of first and higher order.
- Evaluation of multiple integrals and their applications
- The physical quantities involved in engineering field related to vector valued functions The basic properties of vector valued functions and their applications to line, surface and volume integrals

UNIT-I: First Order ODE

Exact, linear and Bernoulli's equations; Applications : Newton's law of cooling, Law of natural growth and decay; Equations not of first degree: equations solvable for p, equations solvable for y, equations solvable for x and Clairaut's type

UNIT-II: Ordinary Differential Equations of Higher Order

Second order linear differential equations with constant coefficients: Non-Homogeneous terms of the type polynomials in , and ; method of variation of parameters; Equations reducible to linear ODE with constant coefficients: Legendre's equation, Cauchy-Euler equation

UNIT-III: Multivariable Calculus (Integration)

Evaluation of Double Integrals (Cartesian and polar coordinates); change of order of integration (only Cartesian form); Evaluation of Triple Integrals: Change of variables (Cartesian to polar) for double and (Cartesian to Spherical and Cylindrical polar coordinates) for triple integrals.
Applications: Areas (by double integrals) and volumes (by double integrals and triple integrals)

UNIT-IV: Vector Differentiation

Vector point functions and scalar point functions. Gradient, Divergence and Curl. Directional derivatives, Tangent plane and normal line. Vector Identities. Scalar potential functions. Solenoidal and Irrotational vectors.

UNIT-V: Vector Integration

Line, Surface and Volume Integrals. Theorems of Green, Gauss and Stokes (without proofs) and their applications

Course outcomes:

After learning the contents of this paper the student must be able to

- Identify whether the given differential equation of first order is exact or not
- **Solve higher differential equation and apply the concept of differential equation to real world problems**
- Evaluate the multiple integrals and apply the concept to find areas and volumes,

Evaluate the line, surface and volume integrals and converting them from one to another

Text Books

- B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36thEdition, 2010
- Erwin kreyszig, Advanced Engineering Mathematics, 9thEdition, John Wiley &Sons,2006 G.B. Thomas and R.L. Finney, Calculus and Analytic geometry, 9thEdition,Pearson, Reprint, 2002.

References

- Paras Ram, Engineering Mathematics, 2ndEdition, CBS Publishes
- S. L. Ross, Differential Equations, 3rdEd., Wiley India, 1984.

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(AUTONOMOUS)

(J2503) OBJECT ORIENTED PROGRAMMING

Common To
B.Tech. I Year II Sem: CSE, ECE, EEE

L	T	P	C
3	0	0	3

Course Objectives:

1. To expose the students to the concepts of Object-Oriented Paradigm
2. To improve students capability in applying object oriented programming concepts in problem solving.
3. To improve students expertise in implementing object oriented concepts using C++ Programming
4. To enable students to understand concepts of templates and exceptional handling
5. To study the concepts of Assembler, Macro Processor, Loader and Linker

Syllabus

UNIT- I
Principles of Object Oriented Programming: Procedure Vs Object Oriented, Paradigm, Basic concepts, benefits, Applications and Object Oriented Languages.
Introduction: Program structure, Creating, Compiling and Linking of C++ program.
Token, Expression and Control Structures: Tokens, Keywords, Identifiers and Constants, Data Types, Operators, Precedence, Type Compatibility, Control Structures, New Features of C++. **Functions:** Function Prototype and Parameter Passing, Inline Functions, Default, Constant Arguments, Recursion, Function Overloading, Function Template.
UNIT - II
Classes and Objects: Defining classes and Member functions, Arrays, Static Members, Friend Functions. **Constructors and Destructors:** Type of Constructors, Dynamic Initialization of Objects, Destructors.
UNIT - III C++ operator overloading: Fundamentals, restrictions, overloading unary / binary operators, overloading ++ and --, Manipulation of Strings. **C++ Inheritance:** Defining derived classes, Types of Inheritance, Virtual Base class Abstract Class, Nesting of classes.
UNIT- IV Pointers and Polymorphism: Pointers and Generic pointer, Pointer to Objects and Derived Classes, this pointer, Virtual Functions, Virtual Destructors. **C++ Stream Input/Output:** Streams, Stream classes, Formatted and Unformatted operations, Manipulators. **Files:** Classes for file Stream operations, Sequential and Random access operations, Command line Arguments
UNIT-V C++ Templates: Introduction, class templates, member function template, overloading template functions. **C++ Exception Handling:** Try, throw, catch
Text Books:
1. E. Balagurusamy "Object Oriented Programming with C++‖ , McGraw-Hill Education (India), 6th Edition 2013
2. Bjarne Stroustrup –The C++ Programming Language‖, Pearson Education, 5th Edition (2013)
3. Robert Lafore "Object-Oriented Programming in C++ ― 4th Edition Sams Publishing, 2002
Reference Books:
1. K.R. Venugopal, Rajkumar, T.Ravishankar, ―Mastering C++‖, McGraw-Hill Education India Pvt.Ltd, Second Edition, ISBN: 0-07-463454-2, 1997.

2. Timothy Bud, ―An Introduction to Object Oriented Programming‖, Pearson Education, Second Edition, ISBN 81-7808-228-4, 2004.

Course Outcomes:

1. Know the differences between procedural language and object-oriented languages
2. **Gain knowledge of Object-Oriented Paradigm for problem solving to be employable**
3. Will be able to gain practical knowledge of OOP concepts using C++
4. Apply reusability concepts like inheritance, polymorphism in application development
5. Use generic programming concepts and modular programming

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)
ENGINEERING PHYSICS

B.Tech I Year I Sem: (ECE ,CSE &ME) (J1007)	**L T P C**
B.Tech I Year II Sem: (EEE, CE) (J2007)	**3 1 0 4**

Objectives:

1. Enable the student to connect the historical development of quantum mechanics and learn the basic principles of quantum mechanics and employs the Bloch's theorem to draw the band structure of solids on the basis of Kronig Penny model.
2. The students learn basic theory of semiconductors and principles and operations of optoelectronic devices.
3. The Students to understand the basic properties of light, Concepts of LASER and it's engineering applications
4. Enable the students to learn the basic principles of dielectrics, magnetic superconductors and their engineering applications and also learn the preparation, dimensional characteristics of nano materials along with their engineering applications
5. Enable the students to learn about the types of oscillation, mechanics, which helps in analyzing and solving the engineering problems.

UNIT-I: Quantum Mechanics

Introduction to quantum mechanics**,** Wave nature of the particle, de-Broglie‘s hypothesis, Davisson and Germer‘s experiment, GP Thompson experiment, Heisen berg‘s uncertainty principle, Schrodinger time independent wave equation, Particle in one dimensional box.
Band theory of Solids: Electron in periodic potential – Bloch theorem**,** Kronig–Penny Model, Brillion zone concept, Effective mass of an electron, Origin of energy band formation-Classification of materials.

UNIT-II: Semiconductor Physics:

Introduction to intrinsic and extrinsic semiconductors, Carrier concentration in conduction band and valancy band of intrinsic and extrinsic semiconductor, Fermi level, Effect of carrier concentration and temperature on Fermi level, Hall Effect- Applications of semiconductors.
Semiconductor Optoelectronics: Radative and Non-radative recombination mechanisms in semiconductors, Formation of PN junction diode-V-I characteristics, Zener diode - characteristics, Solar cell and LED- Construction and working mechanism .

UNIT-III: Optics

Huygens‘ principle, Superposition of waves and interference of light by wave front splitting and amplitude splitting; Young‘s double slit experiment, Newton‘s rings, Michelson interferometer, Farunhofer diffraction from a single slit, Diffraction grating and resolving power.

LASERS

Introduction-characteristics of lasers, absorption, spontaneous emission, stimulated emission, Einstein‘s theory of matter radiation interaction and A and B coefficients; amplification of light by population inversion, Ruby laser, He-Ne laser, Semiconductor diode laser, applications of lasers in science, Engineering and Medicine

UNIT-IV: Dielectric Materials

Introduction-Types of Polarizations, derivation for electronic and ionic polarizabilities, internal fields in solids, Clausius Mossotti equation, Ferro electricity, structure of $BaTiO_3$, piezo-electricity.

Magnetic Materials

Introduction-origin of magnetic moment, Bohr Magneton, classification of Dia, Para and Ferro magnetic materials, Hysteresis curve, Soft and hard magnetic materials; Superconductivity-properties, BCS theory, Type –I &II Superconductors-Applications.

UNIT-V: Oscillations, waves

Simple harmonic motion, Damped and forced simple harmonic oscillator, damped harmonic oscillator – heavy, critical and light damping quality factor, forced mechanical oscillators, mechanical impedance, steady state motion of forced damped harmonic oscillator.

Mechanics

Motion of a rigid body in the plane; Rotation in the plane; Kinematics in a coordinate system rotating and translating in the plane; Angular momentum about a point of a rigid body in planar motion; Euler's laws of motion, their independence from Newton's laws, and their necessity in describing rigid body motion.

Outcomes:

1. The student learns about solving engineering solutions employing the quantum mechanical concepts
2. The students learns about the physics of semiconductor materials and along with their applications in science and engineering
3. The student learns about the construction, working and applications of LASER in engineering.
4. The students get exposure to dielectric and magnetic materials and their engineering applications.
5. **The students learn about theory of waves and oscillation and mechanics of rigid bodies for engineering applications which is employable**.

Text Books:

1. Introduction to Quantum Physics-Eisberg and Resnick
2. J. Singh, Semiconductor Optoelectronics: Physics and Technology, McGraw-Hill Inc.
3. H.J. Pain, The Physics of vibrations and waves
4. Quantum Mechanics- Decker
5. Ian G. Main, Oscillations and waves in physics

REFERENCE

1. Engineering Physics, P.K Palanisamy, Scitech Publications.
2. Applied Physics- Dr. N Chandra Shaker and P. Appal Naidu
3. Applied Physics for Engineers- P. Madhusudana rao, Academic Publishing Company.
4. Engineering Physics, V. Rajandran, Tata mc. Graw Hill Book Publishers
5. Introduction to Mechanics — MK Verma

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)
ENGINEERING CHEMISTRY

	L	T	P	C
B.Tech I year II sem.: EEE,ECE & CE(J2008)	**3**	**1**	**0**	**4**

Course Objectives:

- To achieve the knowledge about various kinds of Orbitals & Splitting patterns.
- To know about the water quality and its parameters, learning the knowledge in the assessment of water quality and purification.
- To achieve the knowledge about various kinds of Electrochemical cells and batteries and corrosion phenomenon.
- To understand the reactions, mechanism and stereochemistry of organic molecules.
- Understand the principle, instrumentation and applications of Spectroscopic techniques.

Unit-1: Molecular structure and Theories of Bonding: (9)

Atomic and Molecular orbitals. Linear Combination of Atomic Orbitals (LCAO), molecular orbitals of diatomic molecules, molecular orbital energy level diagrams of N_2,O_2 and F_2 molecules. π molecular orbitals of butadiene and benzene.

Crystal Field Theory (CFT): Salient Features of CFT – Crystal Field Splitting of transition metalion d-orbitals in Tetrahedral, Octahedral and square planar geometries. Band structure of solids and effect of doping on conductance.

Unit-2: Water and its treatment: (9)

Introduction – hardness of water – Causes of hardness - Types of hardness: temporary and permanent – expression and units of hardness – Estimation of hardness of water by complexometric method. Potable water and its specifications. Steps involved in treatment of water – Disinfection of water by chlorination and ozonization. Boiler feed water and its treatment – Calgon conditioning, Phosphate conditioning and Colloidal conditioning. External treatment of water – Ion exchange process. Desalination of water – Reverse osmosis. Numerical problems.

Unit-3: Electrochemistry and corrosion: (9)

Electro chemical cells – electrode potential, standard electrode potential, types of electrodes – calomel, Quinhydrone and glass electrode. Nernst equation Determination of pH of a solution by using quinhydrone and glass electrode. Electrochemical series and its applications. Numerical problems. Potentiometric titrations. Batteries – Primary (Lithium cell) and secondary batteries (Lead – acid storage battery and Lithium ion battery).

Causes and effects of corrosion – theories of chemical and electrochemical corrosion – mechanism of electrochemical corrosion, Types of corrosion: Galvanic, water-line and pitting corrosion. Factors affecting rate of corrosion, Corrosion control methods- Cathodic protection – Sacrificial anode and impressed current cathodic methods. Surface coatings – metallic coatings – methods of application. Electroless plating of Nickel.

Unit-4: Stereochemistry, Reaction Mechanism and synthesis of drug molecules: (9)

Introduction to representation of 3-dimensional structures, Structural and stereoisomers, configurations, symmetry and chirality. Enantiomers, diastereomers, optical activity and Absolute configuration. Conformation alanalysis of n- butane.

Substitution reactions: Nucleophilic substitution reactions: Mechanism of S_N1, S_N2 reactions. Electrophilic and nucleophilic addition reactions: Addition of HBr to propene. Markownikoff and anti Markownikoff‟s additions. Grignard additions on carbonyl compounds. Elimination reactions: Dehydro halogenation of alkylhalides. Saytzeff rule. Oxidation reactions: Oxidation of alcohols using $KMnO_4$ and chromic acid.

Reduction reactions: reduction of carbonyl compounds using $LiAlH_4$& $NaBH_4$. Hydroboration of olefins. Structure, synthesis and pharmaceutical applications of Paracetamol and Aspirin.

Unit-5: Spectroscopic techniques and applications: (9)

Principles of spectroscopy, selection rules and applications of electronic spectroscopy. vibrational and rotational spectroscopy. Basic concepts of Nuclear magnetic resonance Spectroscopy, chemical shift. Introduction to Magnetic resonance imaging.

Course Outcomes:
- Students will gain the basic knowledge of atomic and molecular orbitals & Splitting patterns.
- They can understand the basic properties of water and its usage in domestic and industrial purposes.
- To gain the knowledge about the Electrochemical cells, batteries and corrosion phenomenon.
- They learn about organic reactions and the stereochemistry of organic molecules.
- **They can predict potential applications of spectroscopy and practical utility in order to become good engineers and entrepreneurs**.

Text books:

- Text Book of Engineering Chemistry by A.Jayashree, Wiley publications, New Delhi.
- Engineering Chemistry by P.C. Jain and M. Jain, Dhanpatrai Publishing Company, New Delhi (2010) .
- Text Book of Engineering Chemistry by Shashi Chawla.
- Engineering Chemistry by Rama Devi, Venkata Ramana Reddy and Rath,Cengage learning, New Delhi. (2016).
- Text Book of Engineering Chemistry by C. Parameshwara Murthy. B.S. Publications.
- Text Book of Engineering Chemistry by Y. Bharathi kumari and Jyotsna Cherikuri, VGS Publications.

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS, AFFILIATED TO JNTUH)
(J2302) ENGINEERING GRAPHICS

B.TECH. I YEAR – II SEM: ME, CIVIL & ECE	L	T	P	C
	1	0	4	3

Pre-requisites: Nil

Course objectives:

1. To Use various engineering drawing instruments along with learn the basics of drawings, dimensioning, scales and conic sections like ellipse, parabola and hyperbola.
2. To Learn projections of points, lines and plane viewed in different positions.
3. To Learn projections of solids and sections of solids in different positions.
4. To impart knowledge of development of surfaces and intersections is most useful of real time applications in industry.
5. Attain the concept of isometric, orthographic projections.

UNIT – I

Introduction to Engineering Drawing: Principles of Engineering Graphics and their Significance, Conic Sections including the Rectangular Hyperbola – General method only. Cycloid, Epicycloid and Hypocycloid, Scales – Plain & Diagonal.

UNIT- II

Orthographic Projections: Principles of Orthographic Projections – Conventions – Projections of Points and Lines, Projections of Plane regular geometric figures.—Auxiliary Planes.

UNIT – III

Projections of Regular Solids – Auxiliary Views - Sections or Sectional views of Right Regular Solids – Prism, Cylinder, Pyramid, Cone – Auxiliary views – Sections of Sphere

UNIT – IV

Development of Surfaces of Right Regular Solids – Prism, Cylinder, Pyramid and Cone, Intersection of Solids: Intersection of – Prism vs Prism- Cylinder Vs Cylinder

UNIT – V

Isometric Projections: Principles of Isometric Projection – Isometric Scale – Isometric Views – Conventions – Isometric Views of Lines, Plane Figures, Simple and Compound Solids – Isometric Projection of objects having non- isometric lines. Isometric Projection of Spherical Parts. Conversion of Isometric Views to Orthographic Views and Vice-versa –Conventions

Introduction to CAD: (For Internal Evaluation Weightage only): Introduction to CAD Software Package Commands.- Free Hand Sketches of 2D- Creation of 2D Sketches by CAD Package

TEXTBOOKS:

1. Engineering Drawing N.D. Bhatt / Charotar
2. Engineering Drawing / N. S. Parthasarathy and Vela Murali/ Oxford

REFERENCE BOOKS:

1. Engineering Drawing / Basant Agrawal and McAgrawal/ McGraw Hill
2. Engineering Drawing/ M. B. Shah, B.C. Rane / Pearson.
3. Computer Aided Engineering Drawing – K Balaveera Reddy et al – CBS Publishers

Course Outcomes:

1. Select, construct and interpret appropriate drawing scales as per the situation and able to draw simple curves.
2. Graduates are able to draw orthographic projections of points ,lines and planes.
3. Able to draw the orthographic projections of solids and sections of solids.
4. **Layout development of solids for practical situations along with able to draw sections of solids which is employable**.
5. Comprehend the isometric projections.

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(AUTONOMOUS)

ENGINEERING PHYSICS AND CHEMISTRY LAB

B.Tech I Year I Sem: (ME, CE & CSE) (J1009)	**L T P C**
B.Tech I Year II Sem: (EEE, ECE) (J2009)	**0 0 3 1.5**

OBJECTIVES:

This course on Physical Sciences lab has been designed with 18 experiments in Physics and Chemistry. The objective of the course is that the student will have exposure to various experimental skills which is very essential for an engineering student. The experiments are selected from various areas of physics and chemistry like Physical Optics, Lasers, Fiber optics, waves and oscillations, semiconductors, Electricity, Conductometry, Potentiometry, etc... The student is also exposed to various tools like Screw Gauge, Vernier callipers, Physical balance, Spectrometer, Microscope, Viscometer, and stalagmometer, etc…

PHYSICS LAB (CYCLE-1)

(Any Six Experiments compulsory)

- Determination of Eenergy gap of semiconductor material of p-n junction diode.
- Determination of frequency of electrical vibrator by using Melde‘s experiment.
- Determination of wavelength of LASER by using diffraction grating.
- Determination of rigidity modulus of a given wire using Torsional pendulum.
- R-C circuit analysis.
- Determination of Numerical aperture of a given optical fiber.
- Determination of the radious of curvature of plano-convex lens by forming Newton‘s rings
- LED-characteristics

CYCLE-2

CHEMISTRY LAB

- Determination of total hardness of water by complexometric method using EDTA
- Estimation of an HCl by Conductometric titrations
- Estimation of Acetic acid by Conductometric titrations
- Estimation of HCl by Potentiometric titrations
- Determination of rate constant of acid catalysed hydrolysis of methyl acetate
- Synthesis of Aspirin and Paracetamol
- Thin layer chromatography calculation of R_f values. egortho and para nitro phenols
- Verification of freundlich adsorption isotherm-adsorption of acetic acid on charcoal
- Determination of viscosity of castor oil and ground nut oil by using Ostwald‘s viscometer.
- Determination of surface tension of a give liquid using stalagmometer.

Laboratory Manuals:

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

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(AUTONOMOUS)

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

(J2506) OBJECT ORIENTED PROGRAMMING LAB

	L	T	P	C
B.Tech. I Year II-SEM: CSE, ECE, EEE	**0**	**0**	**3**	**1.5**

Course Objectives:

1. To expose the students to the practical implementation of Object-Oriented concepts using C++ programming language
2. To improve students capability of object oriented programming for problem solving
3. This course provides in-depth coverage of object-oriented programming principles and techniques using C++.
4. Topics include classes, overloading, data abstraction, information hiding, encapsulation, inheritance, polymorphism, file processing, templates, exceptions, container classes, and low-level language features.
5. To make students capable of using reusability and generic programming concepts in developing applications

<u>LIST OF EXPERIMENTS:</u>

Experiment-I

1. Read 10 numbers and displays them in sorted order.
2. Write functions to swap two numbers using pointers and references.
3. Write a program that prints the sizes of the fundamental types, a few pointer types and a few enumeration of your choice. Use the size of operator.

Experiment-II

4. Write a function that counts the number of occurrences of pair of letters in a string, for example the pair ―ab‖ appears twice in ―xabaacbaxabb‖.
5. Find LCM of two, three and four numbers using function overloading.
6. Create a structure for storing students details (sno, sname, course, Array of five subject‗s marks) provide the functions for printing the total marks, calculating percentage and the result. (Note: Include the functions within the structure).

Experiment-III

7. Write a macro to find square (A+B)-square (C+D).
8. Create a class for complex number and provide methods for addition, subtraction, multiplication and division. Display the output in ―a+ib‖ form.
9. Create a Distance class and provide methods for addition and subtraction of two distances.

Experiment-IV

10. Create a complex number class with default, parameterized, copy constructors and a destructor.
11. Create a class which provides a method to count the number of objects that are created for that class. (Use static method).
12. Create a class INT that behaves exactly like an int. (Note: overload +, -, *, /, %).

Experiment-V

13. Create a string class and overload + to concatenate two Strings, overload () to print substring and overload <, <=, >, >=, = = operators to compare two string objects.
14. Create Date class and overload ++ to print next date and overload -- to print previous date.

Experiment-VI
15. Create a user defined array class Array and overload + to add two arrays, overload * to multiply two arrays, overload to access given position element and also to use left side of an assignment operator.
16. Create a complex number class and overload +, -, * operators using friend functions.
17. Program to perform Matrix operations using operator overloading with friend functions.

Experiment-VII
18. Programs to demonstrate Single, Multiple, Multilevel, Hierarchical, Hybrid and Multipath inheritance.
19. Programs to demonstrate constructors in inheritance.
Experiment-VIII
20. Create a Shape class with methods perimeter, area. Derive classes Circle, Square and Triangle from Shape class. Provide implementation for perimeter, area in the derived classes. (Declare perimeter, area as pure virtual functions).
21. Implement Multipath inheritance by declaring pointers to base class and access the derived class methods using base class pointers.
22. Program to demonstrate of manipulators
Experiment-IX
23. Write a function template to overload max method, which can find maximum of any data type.
24. Create function template to sort an array, which can sort array of any type.
25. Create a Generic calculator class to perform +, -, *, / operations on any type.
26. Create a Generic class for array of variable size and provide sorting, searching on any type.
Experiment-X
27. Find the roots of a quadratic equation. Handle exception for divide by zero.
28. Handle the Array Index out of Bounds Exception when accessing the elements of Arrays.
29. Create a text file of student information and display the contents of file.
Experiment-XI
30. Write a program to read a text file and remove all white space characters and replace each alphanumeric character with next character in the alphabet (Replace z by a and 9 by 0).
31. Copy the contents of one file into another except the blank lines using command line arguments.
32. Create a file with floating point numbers. Read pair of floating numbers from the file and write into another file.
Experiment-XII
33. Read the contents of three files concatenate them and display it.
34. Write complex numbers into a file in binary format and in character format.
35. Create a class with integers and overload << to place integer into a file and overload >> to read an integer.

Course Outcomes:
After completion of the course, the student will be able to…
1: **Skillfull knowledge of implementing Object-Oriented Programming concepts using C++**
2: know the application of Object-Oriented Programming concepts for developing applications
3: debug and document programs in C++
4: develop applications using modularization technique
5: apply reusability and generic programming concepts in application development

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(AUTONOMOUS)

(J3003) Transforms and Complex variables
(Common for EEE &ECE)

B.Tech. II Year I Semester

Objectives:

To learn

- Concept, properties of Laplace transforms
- Solving ordinary differential equations using Laplace transforms techniques.
- Expressing a periodic function by Fourier series and a non-periodic function by Fourier transforms
- Differentiation and integration of complex valued functions.
- Evaluation of integrals using Cauchy‘s integral formula and Cauchy‘s residue theorem.
- Expansion of complex functions using Taylor‘s and Laurent‘s series.

Evaluation of the real integrals and transformations of one plane to another plane.

UNIT-I: Laplace Transforms

Laplace Transforms; Laplace Transform of standard functions; first shifting theorem; Laplace transforms of functions when they are multiplied and divided by ‗t‘. Laplace transforms of derivatives and integrals of function; Evaluation of integrals by Laplace transforms; Laplace transforms of Special functions; Laplace transform of periodic functions.

Inverse Laplace transform by different methods, convolution theorem (without Proof), solving ODEs by Laplace Transform method.

UNIT-II: Fourier series &Fourier transforms

Fourier series, Dircherlet‘s Conditions, Half-range Fourier series. Fourier Transforms, Fourier Sine and cosine transforms, Inverse Fourier transforms

UNIT-III: Complex Variables (Differentiation)

Limit, Continuity and Differentiationof Complex functions. Cauchy-Riemann equations (without proof), Milne- Thomson methods, analytic functions, harmonic functions, finding harmonic conjugate; elementary analytic functions (exponential, trigonometric, logarithm) and their properties

UNIT-IV: Complex Variables (Integration)

Line integrals, Cauchy‘s theorem, Cauchy‘s Integral formula, Liouville‘s theorem, Maximum-Modulus theorem (All theorems without proof); zeros of analytic functions, singularities, Taylor‘s series, Laurent‘s series; Residues, Cauchy Residue theorem (without proof)

UNIT-V: Evaluation of real integrals and conformal transformation

Evaluation of Real Integrals using Residues: ,

Introduction, linear and inverse Transformations, Bilinear Transformations, Conformal mapping

Course outcomes:

After learning the contents of this paper the student must be able to

- Use the Laplace transforms techniques for solving ODE‘s
- Express any periodic function in terms of sines and cosines.

- Express a non-periodic function as an integral representation.
- Analyse the complex function with reference to their analyticity, integration using Cauchy‘s integral and residue theorems
- Taylor‘s and Laurent‘s series expansions of complex function
- Evaluate the real integrals and transformations of one plane to

another plane

- **Skillfull knowledge for real time applications**

Text Books

- B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010.
- S.S. Sastry, Introductory methods of numerical analysis, PHI, 4th Edition, 2005.

J. W. Brown and R. V. Churchill, Complex Variables and Applications, 7th Ed., Mc-Graw Hill, 2004.

References

- M. K. Jain, SRK Iyengar, R.K. Jain, Numerical methods for Scientific and Engineering Computations , New Age International publishers.
- Erwin kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley &Sons,2006.

JAYMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)
(J3401) ELECTRONIC DEVICES AND CIRCUITS

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

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

1. to understand the principles and working of PN Diode as a Rectifier and Circuit element a Regulator.
2. to understand basic principles and working of BJT,FET and Special Devices.
3. to understand basic principles and working of different types of FETs.
4. to understand Biasing and stabilization concepts of BJT.
5. to understand Special purpose devices such as Solar cells, LED, UJT & SCR

UNIT - I:
P-N JUNCTION DIODE:
Qualitative Theory of P-N Junction, P-N Junction as a Diode, Diode Current Equation, Volt- Ampere Characteristics,Static and Dynamic Resisitance, Diffusion and Transition capacitance Diode Equivalent Circuits,
RECTIFIERS AND FILTERS: Half Wave and Full Wave Rectifiers, Rectifier with L, C,L-Section and Pi-Section filters, Regulators.

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

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

UNIT-IV:
FIELD EFFECT TRANSISTOR:
Construction, principle of operation, symbol and Volt-Ampere characteristics of JFET and MOSFET.
Special Purpose Devices and Their Operations: Breakdown Mechanisms. Zener Diode Characteristics.Varactor Diode, Tunnel Diode, Photo Diode, LED, Solar Cell ,UJT & SCR.

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

TEXT BOOKS:

1. Electronic Devices and Circuits – David A. Bell, Oxford University Press
2. Electronic Devices and Circuits – S.Salivahanan, N.Suresh Kumar, A.Vallavaraj, TMH.
3. Semiconductor Physics and Devices – D.Neamen, D. Biswas, McGrawhill Education Publications

REFERENCE BOOKS:

1. Electronic Devices and Circuits – J. Millman, C.C. Halkias, Satyabratha Jit,TMH.
2. Electronic Devices and Circuits – R.L. Boylestad and Louis Nashelsky, , PEI/PHI.
3. Electronic Devices and Circuits - K. Lal Kishore, BSP.

COURSE OUTCOMES:

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

1. Understand and Analyse the different types of diodes, operation and its characteristics.
2. Design and analyse the DC bias circuitry of BJT and FET.
3. Design biasing circuits using diodes and transistors.
4. To analyze and design diode application circuits, amplifier circuits and oscillators employing BJT, FET devices.
5. **To analyze and understand the special purpose diodes and their application in industry**.

JAYMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(AUTONOMOUS)

(J3208) ELECTRICAL TECHNOLOGY

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

Course Objectives:

1. To Analyze Concept and Design of various types of passive Filters
2. To study the basic concepts Magnetic Circuits, and their use in the circuit theory.
3. To study the basic concepts of Transformers.
4. To study the different types of D.C Machines Characteristics.
5. To study the different types of A.C Machines Characteristics

UNIT - I:

Filters and Symmetrical Attenuators:

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

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

UNIT - II:

Locus diagrams and Magnetic Circuits:

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

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

UNIT-III:

Transformers:

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

UNIT - IV:

DC Machines:

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

UNIT - V:

Machines:

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

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

TEXT BOOKS:

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

REFERENCE BOOKS:

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

Course Outcomes:

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

1. Filters and attenuators
2. Basic magnetic circuits
3. The operation of Transformers,
4. The operation DC machines
5. The operation AC Machines

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

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC AUTONOMOUS)

(J3402) SIGNALS AND SYSTEMS

B.Tech II Year I Sem: ECE

L	T	P	C
3	0	0	3

OBJECTIVE:

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

UNIT I :
SIGNAL ANALYSIS
Analogy between vector and signals, Orthogonal signal space, signals approximation using orthogonal function, Mean square Error, Closed or Complete set of orthogonal functions, Orthogonality Complex function.

Continuous-Time (CT) and Discrete-Time (DT)Classifications of signals, Exponential and sinusoidal signals, Properties of Signals: Addition, Multiplication, time shifting ,Amplitude scaling, Folding, Concepts of Impulse function, Unit Step function, Signum function, CT & DT Systems Basic Systems Properties.

UNIT II:
FOURIER SERIES AND FOURIER TRANSFORMS
Fourier Series:
Representation of Fourier series, Continuous time periodic signals, Properties of Fourier series, Dirchlet's conditions, Trigonometric Fourier series and Exponential Fourier series, Complex Fourier Spectrum.

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

UNIT III:
LAPLACE TRANSFORMS AND Z-TRANSFORM

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

Z Transforms: Concept of Z-Transforms of Discrete Sequence, ROC, Inverse Z-Transform, Properties of Z-Transform. Distinction between Laplace, Fourier and Z-Transforms

UNIT IV:

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

SIGNAL TRANSMISSION THROUGH LINEAR SYSTEMS

Linear Systems, Impulse Response, Response of a Linear Systems, Linear Time Invariant(LTI) System, properties of LTI systems , Linear Time Variant(LTV) Systems, Transfer function of a LTI Systems, Filter characteristics of Linear Systems ,Distortion less transmission through a system, Signal bandwidth, System bandwidth. Ideal LPF,HPF and BPF characteristics, Causality and Paley-wiener criterion for physical realization,.

UNIT V:

CONVOLUTION AND CORRELATION OF SIGNALS: Concept of convolution in Time domain and Frequency domain, Graphical representation of Convolution, Convolution property of Fourier Transform, Correlation and Auto Correlation of function Properties of Correlation function, Energy density spectrum, Parsevals‘s Theorem.

Power density spectrum, Relation between Auto correlation function and Energy/power spectral density function, Relation between Convolution and Correlation, Detection of periodic signals in the presence of Noise by Correlation, Extraction of signal from noise by filtering.

TEXT BOOKS:

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

REFERENCE BOOKS:

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

COURSE OUTCOMES:

After learning the course the students should be able to:

1. **Understand about various types of signals & system, classify them, analyze them, and perform various operations to solve on them**.
2. Express periodic signals in terms of Fourier series and express their spectrum and express arbitrary signals as Fourier Transform .
3. Study the continuous and discrete relation and relation between Fourier Transform, Laplace Transform and Z-Transform.
4. Understand the principle of linear systems filter characteristics of a systems and its bandwidth.
5. Understand the applications of autocorrelation and cross correlation in Communication.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(UGC-AUTONOMOUS)

(J3403) PROBABILITY THEORY AND STOCHASTIC PROCESSES

B.Tech. II Year I Sem.ECE	**L T P C**
	3 0 0 3

OBJECTIVES:

The primary objective of this course is:

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

UNIT-I:

PROBABILITY AND RANDOM VARIABLE

Probability: Probability introduced through Sets and Relative Frequency, Experiments and Sample Spaces, Discrete and Continuous Sample Spaces, Events, Probability Definitions and Axioms, Mathematical Model of Experiments, Probability as a Relative Frequency, Joint Probability, Conditional Probability, Total Probability, Bye‘s Theorem, Independent Events.

Random Variable: Definition of a Random Variable, Conditions for a Function to be a Random Variable, Discrete, Continuous and Mixed Random Variables

UNIT -II:

DISTRIBUTION & DENSITY FUNCTIONS AND OPERATION ON ONE RANDOM VARIABLE – EXPECTATIONS

Distribution & Density Functions: Distribution and Density functions and their Properties - Binomial, Poisson, Uniform, Gaussian, Exponential, Rayleigh and Conditional Distribution, Methods of defining Conditional Event, Conditional Density and Properties.

Operation on One Random Variable – Expectations: Introduction, Expected Value of a Random Variable, Function of a Random Variable, Moments about the Origin, Central Moments, Variance and Skew, Chebychev‘s Inequality, Characteristic Function, Moment

Generating Function, Transformations of a Random Variable: Monotonic Transformations for a Continuous Random Variable, Non-monotonic Transformations of Continuous Random Variable, Transformation of a Discrete Random Variable.

UNIT-III:

MULTIPLE RANDOM VARIABLES AND OPERATIONS

Multiple Random Variables: Vector Random Variables, Joint Distribution Function, Properties of Joint Distribution, Marginal Distribution Functions, Conditional Distribution and Density – Point Conditioning, Conditional Distribution and Density – Interval conditioning, Statistical Independence, Sum of Two Random Variables, Sum of Several Random Variables, Central Limit Theorem (Proof not expected), Unequal Distribution, Equal Distributions.

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

UNIT-IV:

STOCHASTIC PROCESSES – TEMPORAL CHARACTERISTICS:

The Stochastic Process Concept, Classification of Processes, Deterministic and Nondeterministic Processes, Distribution and Density Functions, Concept of Stationarity and Statistical Independence, First-Order Stationary Processes, Second-Order and Wide-Sense Stationarity, Nth Order and Strict-Sense Stationarity, Time Averages and Ergodicity, Mean-Ergodic Processes, Correlation-Ergodic Processes.

Autocorrelation Function and its Properties, Cross-Correlation Function and its Properties, Covariance and its Properties, Linear System Response of Mean and Mean-squared Value, Gaussian Random processes, Poisson Random Process.

UNIT-V:

STOCHASTIC PROCESSES – SPECTRAL CHARACTERISTICS:

Power Spectrum: Properties, Relationship between Power Spectrum and Autocorrelation Function, Cross-Power Density Spectrum, Properties, Relationship between Cross-Power Spectrum and Cross-Correlation Function.

Spectral Characteristics of System Response: Power Density Spectrum of Response, Cross-Power Spectral Density of Input and Output of a Linear system**.**

TEXT BOOKS:

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

REFERENCE BOOKS:

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

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JAYMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(Autonomous)

(J3404) ELECTRONIC DECVICES AND CIRCUITS LAB

II Year I Sem B.Tech: ECE & EEE **L T P C**
0 0 3 1.5

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.
3. Study and operation of
   i. Digital Multimeters
   ii. Function Generator
   iii. Regulated Power Supplies
   iv. CRO.

PART B:

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

PART C: Equipment required for Laboratories:

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

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC- AUTONOMOUS)

(J3405) BASIC SIMULATION LAB

II B.Tech I Sem.: ECE

L	T	P	C
0	0	3	1.5

List of Experiments:

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

Requirements :

1. MATLAB Tool Box
2. Computer Systems

JAYMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(AUTONOMOUS)

(J3209) ELECTRICAL TECHNOLOGY LAB

II Year B. Tech. ECE I- Semester	L	T	P	C
	0	0	3	1.

List of Experiments:

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

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC- AUTONOMOUS)

(JMC01) ENVIRONMENTAL STUDIES

B.Tech.- II Yr I Sem: Common to all **L T P C**
3 0 0 0

COURSE OBJECTIVES:

2. Understanding the importance of ecological balance for sustainable development.
3. Understanding the impacts of developmental activities and mitigation measures.
4. 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.

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.

COURSE OUTCOMES

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

1. Understanding of Ecosystem,
2. **Natural resources are useful for entrepreneurship**
   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.

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J4406) ANALOG COMMUNICATIONS

II Year B.Tech. II-Sem: ECE **L T P C**
3 0 0 3

COURSE OBJECTIVES:
This course aims at:
1. Developing and understanding of the design of analog communication system.
2. Establishing a firm foundation for the understanding of communications systems, and the relationship among various technical factors when such systems are designed.
3. Able to learn the different modulation techniques such as AM, FM and PM
4. Able to learn modulation techniques for Transmission and Reception with certain noise component
5. Different Pulse modulation techniques.

UNIT I:
AMPLITUDE MODULATION
Introduction to communication system, Need for modulation, Amplitude Modulation, Time domain and frequency domain description, Generation and Detection of AM waves.
Double side band suppressed carrier modulation: time domain and frequency domain description of DSB-SC, Generation and Detection of DSB-SC Waves.

UNIT II:
SSB MODULATION
Introduction to Hilbert Transform, Frequency domain and Time domain description Generation and Detection of SSB Wave.
Vestigial side band modulation: Frequency and Time domain description, Generation and Detection of VSB Modulated wave, Comparison of AM Techniques, Applications of different AM Systems.

UNIT III:
ANGLE MODULATION
Basic concepts, Frequency Modulation, Spectrum Analysis of Sinusoidal FM Wave, Narrow band FM, Wide band FM, Constant Average Power, Transmission bandwidth of FM Wave, Generation and Detection of FM Waves Comparison of FM and AM, Frequency Division Multiplexing.

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

UNIT V:
RECEIVERS
Radio Receiver - Receiver Types - Tuned radio frequency receiver, Superhetrodyne receiver, RF section and Characteristics - Frequency changing and tracking, Intermediate frequency, AGC, FM Receiver, Comparison with AM Receiver, Amplitude limiting.
PULSE MODULATION: Types of Pulse modulation, PAM (Single polarity, double polarity) PWM: Generation and demodulation of PWM, PPM, Generation and demodulation of PPM, Time Divison Multiplexing.

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

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

COURSE OUTCOMES:

Upon completion of the subject, students will be able to
1.Conceptually understand the baseband signal & system.
2. Identify various elements, processes, and parameters in communication systems and describe their functions, effects, and interrelationship.
3. Understand basic knowledge of AM, FM transmission & reception.
4.Understand various noise component in different communication Schemes.
5.**Understands concept of receivers and the various pulse communication techniques also to be used for employable**.

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC AUTONOMOUS)

II B.Tech II Sem: ECE L T P C
3 0 0 3

(J4407) PULSE AND DIGITAL CIRCUITS

COURSE OBJECTIVE:

The main objectives are:

1. To explain the complete response of R – C and R-L-C circuits.
2. To explain clippers, clampers, switching characteristics of transistors and sampling gates.
3. To construct various multivibrators using transistors, design of sweep circuits and sampling gates.
4. To discuss realize logic gates using diodes and transistors.
5. To learn Multivibrator circuits and their applications.

UNIT-I:

LINEAR WAVE SHAPING:

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

UNIT-II:

NON LINEAR WAVE SHAPING:

Diode and Transistor clippers, Two level clippers, Clamping operation, Clamping circuit theorem, practical clamping circuits and taking source and diode resistances into account, comparators and its applications.

UNIT-III:

MULTIVIBRATORS:

Switching characteristics and switching times of BJT‟s and FET‟s, Analysis and design of Astable, monostable, bi-stable multivibrators and Schmitt triggers using transistors.

UNIT-IV:

SWEEP CIRCUITS:

Principles and methods of generating Time base waveforms, Miller and bootstrap.

SYNCHRONIZATION AND FREQUENCY DIVISION:

Principles of synchronization, frequency division in sweep circuit, and stability of relaxation devices, astable and monostable relaxation circuits, and synchronization of a sweep circuit with symmetrical signals, sine wave frequency division with a sweep circuit.

UNIT-V:

SAMPLING GATES:

Basic operating principle of gates, Unidirectional and Bi-directional gates using diodes and transistors

REALIZATION OF LOGIC GATES:

AND, OR, and NOT gates using diodes and transistors, DCTL, RTL, DTL, TTL and CMOS logic families and its comparison.

TEXT BOOKS:

1. Millman‟s Pulse, Digital and Switching Waveforms- J. Millman, H. Taub and Mothiki S. Prakash Rao, 2 Ed., 2008 TMH.
2. Solid State Pulse Circuits- David A. Bell, 4 Ed., 2002 PHI.
3. Pulse and Digital Circuits- A. Anand Kumar, 2005 PHI

REFERENCE BOOKS:

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

OUTCOMES:

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

1. Understand the applications of diode as integrator, differentiator, clipper and clamper circuits.
2. Learn various switching devices such as diode, transistor.
3. Difference between logic gates and sampling gates.
4. Design multivibrators for various applications, synchronization.
5. **Understand and apply multivibrator circuits in real time applications**

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(AUTONOMOUS)

(J4408) ELECTRONIC CIRCUIT ANALYSIS

B.Tech. II Year II SEM: ECE **L T P C**
3 0 0 3

COURSE OBJECTIVE:

To familiarize the student with the

1. Analysis and design of basic transistor amplifier circuits using Hybrid model
2. Amplifier frequency response characteristics
3. Analysis of FET amplifiers and feedback amplifiers
4. Classification and frequency of oscillations of LC & RC oscillators
5. Large signal amplifiers and tuned amplifies.

UNIT I:

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

MULTI STAGE AMPLIFIERS

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

UNIT II:

BJT AMPLIFIERS - FREQUENCY RESPONSE

General frequency considerations, Frequency response of BJT Amplifier, Analysis at Low and High frequencies, Effect of coupling & Bypass capacitors.

The Hybrid π- CE Transistor Model, CE Short circuits current Gain, Current Gain with Resistive Load, Gain - Bandwidth Product.

UNIT III:

FEEDBACK AMPLIFIERS

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

UNIT IV: OSCILLATORS

LC Oscillators: Classification of Oscillators, Conditions for Oscillations, Generalized analysis of LC oscillations - Hartley and Colpitt‘s Oscillators,

RC Oscillators: RC phase shift Oscillator, Wien - Bridge & Crystal Oscillators.

UNIT V:

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

Tuned amplifiers: Introduction, Q - Factor, classification, Small Signal single Tuned tuned Amplifier, Effect of Cascading Single Tuned Amplifiers on Bandwidth, Stagger tuned Amplifiers.

TEXT BOOKS :

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

REFERENCE BOOKS:

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

COURSE OUTCOMES:

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

1. Analyze and design the basic transistor amplifier circuits using Hybrid model
2. Analyze Amplifier frequency response characteristics
3. Analyze FET amplifiers and feedback amplifiers
4. Understand the principle of frequency of oscillations of LC & RC oscillators
5. Understand the concepts of large signal amplifiers and tuned amplifies.
6. To improve his employability

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC- AUTONOMOUS)

(J4409) DIGITAL SYSTEM DESIGN

II Year I Sem.: CSE	**L T P C**
II Year II Sem.: ECE	**3 0 0 3**

COURSE OBJECTIVE

1. This Subject exposes the students to learn Digital Fundamentals
2. Student will be able to Design, Analyze and Interpret Combinational Digital Circuits.

3. Student will be able to Design, Analyze and Interpret Sequential Digital Circuits.
4. Learn logic principles to various combinational and sequential circuits.
5. Understands the concepts of logic families

UNIT- I: NUMBER SYSTEMS & BOOLEAN ALGEBRA

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

UNIT-II: GATE LEVEL IMPLEMENTATION AND MINIMIZATION

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

UNIT-III: COMBINATIONAL LOGIC DESIGN

Combinational Circuit, Analysis Procedure, Design Procedure, Examples of Combinational Digital Circuits(Adders, Subtractor, Adder-Subtractor etc.) Serial and parallel adders, BCD Adder. Comparators, Multiplxers, Demultiplexer, Encoder, Decoder. Hazards in Combinational Circuits, Hazards free realization.

UNIT-IV: SEQUENTIAL LOGIC DESIGN

Introduction to sequential Circuits: Latches and Flip-Flops (RS,JK, D, T and Master Slave), Design of Clocked Flip-Flop, Flip-Flop Conversion, Ripple and Synchronous Counters, Shift Registers, Finite State Machine Design and Analysis

UNIT-V: Introduction to Logic Families: TTL, ECL, CMOS, PAL, PLA, PLD, FPGA, CPLD etc.

TEXT BOOKS :

1. Maris Mano: ―Digital Design‖ Prentice Hall 1993.
2. RP Jain : Modern Digital Electronics Tata McGraw Hill 4th Edition 2009

REFERENCE BOOKS:

1. Charles H.Roth : Digital System Design using VHDL
2. Zvi Kohavi : Switching and Finite Automata Theory, CAMBRIDGE 3rd Edition.

<u>Course Outcomes:</u>

1. Student understands Digital logic Principles, Number systems etc.
2. Understands the Binary logic principles in implementing Gate level Design
3. Understands and applying the Combinational Circuits
4. Understands and applying the sequential circuit logic in applications of Memeories, Registers, Flip-Flops and counters.
5. **Understands and applying the Various logic level in Logic families in real time applications.**

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(UGC- AUTONOMOUS)

(J4410) ELECTROMAGNETIC WAVES & TRANSMISSION LINES

B.Tech. II YEAR II SEM: ECE

L	T	P	C
3	0	0	3

COURSE OBJECTIVES:

1. Understand basic fundamental theory concept of electromagnetic waves and transmission lines and their applications
2. Understand the time varying Maxwell equations and their applications in electromagnetic waves.
3. To study the relationship between the time varying electric and magnetic field
4. To learn and analyze basic transmission line parameters in Phasor domain
5. To know how waves propagate in dielectric and lossy media

UNIT-I

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

UNIT-II

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

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

UNIT-III

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

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

UNIT-IV
TRANSMISSION LINES-I:
Types, Parameters, Transmission Line Equations, Primary & Secondary Constants, Expressions for Characteristic impedance, Propagation Constant, Phase and Group Velocities, infinite Line

Concepts, Lossless/Low Loss Characterization, Distortion - Condition for Distortion less and Minimum Attenuation, Loading - Types of Loading, Illustrative Problems.

UNIT-V
TRANSMISSION LINES-II:
Input impedance Relations, SC and OC Lines, Reflection Coefficient, VSWR. UHF Lines as Circuit Elements Lines - , $\lambda/8$, $\lambda/4$, $\lambda/2$, lines impedance Transformations, Significance of Zmin and Zmax, Smith Chart - Configuration and Applications, Single and Double Stub

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

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

Course Outcomes:
1. **Study time varying Maxwell equations and their applications in electromagnetic waves which is employable**
2. Determine the relation ship between time varying electric and magnetic field
3. Analyze basic transmission line parameters in phasor domain.
4. Using Maxwell equation describing the propogation of electromagnetic waves in vacuum
5. To learnt waves propogating dielectric and lossy media

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC AUTONOMOUS)

B.Tech II Year II Sem.: ECE **L T P C**
0 0 3 1.5

(J4411) PULSE AND DIGITAL CIRCUITS LAB

List of experiments:

Minimum eight experiments to be conducted:

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

Equipment required for the Laboratory:

1. Regulated power supply – 0 – 30 V
2. Fixed power supply line connected.
3. CRO's - 0 – 20M Hz
4. Function Generators -- 0 – 1M Hz

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC- AUTONOMOUS)

II Year II Sem.: ECE **L T P C**
0 0 3 1.5

(J4412) ELECTRONIC CIRCUIT ANALYSIS LAB

List of experiments

Minimum eight experiments to be conducted:

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

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

II) Testing in the Hardware Laboratory (Minimum two Experiments)
1. Hartley oscillators
2. Colpitt‘s oscillators
3. RC coupled amplifier
4. Class B power amplifier

Equipment Requirements:

1. Open Source Tina Pro Software
2. Computer Systems
3. Trainer Kits for Hardware experiments

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(AUTONOMOUS)

(J4413) ANALOG COMMUNICATIONS LAB

II B.TECH II SEM: ECE **L T P C**
0 0 3 1.5

Analog Communication Experiments

1. Amplitude Modulation and Demodulation

2. DSB-SC Modulation and Demodulation
3. SSB-SC Modulation and Demodulation
4. Frequency Modulation
5. Pre-Emphasis and De-Emphasis
6. Sampling Theorem
7. Frequency Synthesizer
8. AGC Characteristics
9. Phase Locked Loop
10. Study of Spectrum Analyzer

Equipment Required:

1. Trainer Kits for the above said experiments
2. Cathode Ray Oscilloscope
3. Function Generator
4. Spectrum Analyzer.

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(AUTONOMOUS)
Narsampet, Warangal.

(JMC02) Gender Sensitization

	L	T	P	C
B.Tech. II Year: All Branches	**2**	**0**	**0**	**0**

Course Objectives:

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

UNIT – I UNDERSTANDING GENDER:
Gender: Why Should We Study It? (Towards a World of Equals: Unit -1) Socialization: Making Women, Making Men (Towards a World of Equals: Unit -2) Introduction. Preparing for Womanhood. Growing up Male. First lessons in Caste. Different Masculinities.

UNIT – II GENDER AND BIOLOGY Missing Women:
Sex Selection and Its Consequences (Towards a World of Equals: Unit-4) Declining Sex Ratio. Demographic Consequences. Gender Spectrum: Beyond the Binary (Towards a World of Equals: Unit -10) Two or Many? Struggles with Discrimination.

UNIT – III GENDER AND LABOUR Housework:
the Invisible Labour (Towards a World of Equals: Unit -3) –My Mother doesn‘t Work.‖ –Share the Load.‖ Women‘s Work: Its Politics and Economics (Towards a World of Equals: Unit -7) Fact and Fiction. Unrecognized and Unaccounted work. Additional Reading: Wages and Conditions of Work.

UNIT – IV ISSUES OF VIOLENCE Sexual Harassment:
Say No! (Towards a World of Equals: Unit -6) Sexual Harassment, not Eve-teasing- Coping with Everyday Harassment- Further Reading: ―Chupulu‖. Domestic Violence: Speaking Out (Towards a World of Equals: Unit -8) Is Home a Safe Place? -When Women Unite [Film]. Rebuilding Lives. Additional Reading: New Forums for Justice. Thinking about Sexual Violence (Towards a World of Equals: Unit -11) Blaming the Victim-–I Fought for my Life….‖ – Additional Reading: The Caste Face of Violence.

UNIT – V GENDER : CO – EXISTENCE Just Relationships:
Being Together as Equals (Towards a World of Equals: Unit -12) Mary Kom and Onler. Love and Acid just do not Mix. Love Letters. Mothers and Fathers. Additional Reading: Rosa Parks-The Brave Heart.

Prescribed Textbook : All the five Units in the Textbook, ―Towards a World of Equals: A Bilingual Textbook on Gender‖ written by A.Suneetha, Uma Bhrugubanda, Duggirala Vasanta, Rama Melkote, Vasudha Nagaraj, Asma Rasheed, Gogu Shyamala, Deepa Sreenivas and Susie Tharu and published by Telugu Akademi, Hyderabad,Telangana State in the year 2015.

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

REFERENCE BOOKS:

- Menon, Nivedita. Seeing like a Feminist. New Delhi: Zubaan-Penguin Books, 2012
- Abdulali Sohaila. –I Fought For My Life…and Won.‖Available online at:
- http://www.thealternative.in/lifestyle/i-fought-for-my-lifeand-won-sohaila-abdulal/

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 labour 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 and improve the skills of students to understand and respond to gender violence**.

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCEINCES
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B.Tech III Year. I-Sem.ECE

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(J5414) IC Applications

Course Objectives:

The main objectives of the course are:

1. To Study the basic building blocks of Linear integrated circuits.
2. To Study the applications of Operational amplifiers.
3. To Study the Timers and Phase Locked Loops.
4. To Study the theory of ADC and DAC.
5. To understand the working of basic digital Integrated Circuits.

UNIT I:

INTEGRATED CIRCUITS: Introduction, Classification of Integrated Circuits, Fabrication Techniques of ICs

INTRODUCTION TO OP-AMP: Introduction, Internal blocks of Op-Amp, Ideal and Practical Op-Amp, Op-amp characteristics-DC and AC Characteristics.741 Op-Amp and its Features, Modes of operation- inverting, non-inverting.

UNIT II:

APPLICATIONS OF OP-AMPS:

Basic Applications- Summing Ampifier, Instrumentation Amplifier, AC Amplifier, V to I and I to V Converters, Sample & Hold Circuits, Differentiators and Integrators.

Comparators and waveform Generators- Comparators, Schmitt Trigger & its applications Multivibrators (Monostable and Astable).

UNIT III:

ACTIVE FILTERS

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

TIMERS & PHASE LOCKED LOOPS

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

UNIT IV:

D-A AND A- D CONVERTERS

Introduction, Basic DAC Techniques- Weighted Resistor Type. R-2R Ladder Type, inverted R-2R Type and IC 1408 DAC.

Different types of ADCs - Parallel Comparator Type, Counter Type, Successive Approximation Register Type and Dual Slope Type DAC and ADC Specifications.

UNIT-V:

Digital ICs: Classifications, Standard TTL NAND Gate-Analysis & Characteristics, TTL Open Collector Outputs. Tristate TTL, MOS & CMOS open drain and tristate outputs.

Comparison of Various Logic Families. IC interfacing- TTL driving CMOS & CMOS driving TTL.

TEXT BOOKS:

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

REFERENCE BOOKS:

1. Op-Amps and Linear Integrated Circuits, R.F. Coughlin & Fredrick F. Driscoll, PHI.

2. Operational Amplifiers and Liner Integrated Circuits: theory & applications, Denton J. Daibey, TMH

3. Design with operational amplifiers &Analog Integrated Circuits, Serigo Franco. McGraw Hill.

4. Digital Fundamentals - Floyd and Jain, Pearson Education.

Course Outcomes:
After completion of this course, students will have….

1. A thorough understanding of Operational amplifiers with Linear Integrated Circuits.
2. Understanding of the Different families of Digital Integrated Circuits and their characteristics.
3. Also student will able to design circuits using Operational amplifiers for various applications such Timers and Filters.
4. **Understands ADC & DAC along with types for Real world problems**
5. Learned the concepts on Digital ICs for VLSI Technology and Design

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B.Tech. III Year I Sem: ECE **L T P C**
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(J5415) DIGITAL SIGNAL PROCESSING

Course Objectives:
1. To learn the fundamental concepts of Digital Signal Processing.
2. To explore the properties of DFT in mathematical problem solving. To illustrate FFT calculations mathematically and develop FFT based DSP algorithms.
3. To learn the Physical realization of Digital Filters.

4. To study the Design of IIR &FIR filters Mathematically.
5. To introduce DSP applications, Multirate Signal Processing.

UNIT-I :

Introduction: Introduction to Digital Signal Processing

Classification of Signals, The Representation of discrete –time signals and sequences, Block Diagram of Processing system, Signal Manipulations, Linear Time Invariant Systems, Stability, Causality, Linear constant coefficient difference equation, frequency domain representation of DTS& Signals.

UNIT-II:

Discrete Fourier Transform: Introduction , DFT and its properties, FFT algorithms
8-Point DFT using radix-2 FFT Decimation In Time, Decimation in Frequency , Linear convolution of sequences using DFT, Circular convolution of sequence using DFT, Computation of DFT :Overlap-add Method, Over-lap save Method, Relation between DTFT,DFS,DFT and Z-transform.

UNIT-III:

Realization of Digital Filters : Classification of filter on the their pole zero diagram, Realization of IIR systems by Direct form-I, Direct form-II, Cascade and Parallel. Realization of FIR systems by Direct form, cascade and linear phase system.

UNIT-IV:

DigitalFilterDesignTechniques:Designof IIR filter Methods IIT and BLT. Design of But terworth and Chebyshev type -I IIR filter. FIR filter Design : Design of FIR filter by using Different Windowing Technique by using Frequency Sampling. Comparison of IIR &FIR filters.

UNIT-V

Applications of DSP: Multirate signal processing: Decimation, Interpolation, Sampling rate conversion by a rational factor – Adaptive Filters: Introduction, Applications of adaptive filtering to equalization. Applications to Speech Processing, Radar signal Processing ,Bio-medical signal processing.

Text Books:

1.Digital signal processing-P.Ramesh Babu Second edition.
2.Digital signal Processing-A.Anand Kumar.

Reference Books :

1. Proakis Manolakis, _Digital Signal Processing : Principles, Algorithms and Applications‘ Fourth 2007, Pearson Education, ISBN 81-317-1000-9.
2. Digital signal processing- Nagoor Khani, TMG,2012.
3. Emmanuel C. Ifeachor, Barrie W. Jervis, –Digital Signal Processing: A Practical Approach‖, Pearson Education ISBN 0-201-59619- 9

Course Outcomes: Learner will be able to…

1. To understand the concept of DT Signal and perform signal manipulation.
2. Understand the Properties of DFT in mathematical problem solving, and FFT Algorithms.
3. Understand the Physical Realization of Digital filters.

4. Understand Design of Digital filters.
5. **Understand the Multirate DSP Techniques and in real time applications**.

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(J5455) DIGITAL COMMUNICATIONS

Prerequisite: Analog Communications

Course Objectives:

- To understand the functional block diagram of Digital communication system.
- To understand the need for source and channel coding.
- To study various source and channel coding techniques.
- To understand a mathematical model of digital communication system for bit error rate analysis of different digital communication systems.
- To study the advantages of spread spectrum techniques and performance of spread spectrum.

UNIT I:

Elements of Digital Communication Systems: Model of Digital Communication Systems, Digital Representation of Analog Signal, Certain Issues in Digital Transmission, Advantages of Digital Communication Systems, Sampling Theorem, Types of Sampling – Impulse Sampling , Natural Sampling , Flat – Top Sampling. Introduction to Baseband Sampling.

Pulse Code Modulation: PCM Generation and Reconstruction, Quantization Noise, Non Uniform Quantization and Companding, DPCM, Adaptive DPCM, DM and Adaptive DM, Noise in PCM and DM.

UNIT II:

Digital Modulation Techniques: Introduction, ASK, ASK Modulator, Coherent ASK Detector, Non-Coherent ASK Detector

Frequency Shift Keying: Bandwidth and Frequency Spectrum of FSK, Non Coherent FSK Detector, Coherent FSK Detector, FSK Detection using PLL, BPSK, Coherent PSK Detection, QPSK, Differential PSK.

UNIT III:

Baseband Transmission and Optimal Reception of Digital Signal: A Baseband Signal Receiver, Probability of Error, Optimum Receiver, Coherent Reception, Signal Space Representation and Probability of Error, Eye Diagrams, Cross Talk.

Information Theory:

Entropy, Information rate, Source coding: Huffman coding, Shannon Fano coding, Mutual information, Channel capacity of discrete channel, Shannon-Hartley law; Trade -off between bandwidth and SNR

UNIT IV:

Error Control Codes

Linear Block Codes: Matrix Description of Linear Block Codes, Error Detection and Error Correction Capabilities of Linear Block Codes.

Cyclic Codes: Algebraic Structure, Encoding, Syndrome Calculation, Decoding.

Convolution Codes: Encoding, Decoding using State, Tree and Trellis Diagrams, Decoding using Viterbi Algorithm, Comparison of Error Rates in Coded and Un coded Transmission.

UNIT V:

Spread Spectrum Modulation:

Use of Spread Spectrum, Direct Sequence Spread Spectrum, Code Division Multiple Access, Frequency Hopping Spread Spectrum.

PN Sequence: Generation and Characteristics, Synchronization in Spread Spectrum Systems.

TEXT BOOKS:

1. Principles of Communication Systems - Herbert Taub, Donald L Schiling, Goutam Saha, 3rd Edition, Mcgraw-Hill, 2008.
2. Digital and Analog Communication Systems – Sam Shanmugam, John Wiley, 2005.

REFERENCES:

1. Digital Communications – John G. Proakis , Masoud Salehi – 5th Edition, Mcgraw-Hill, 2008.
2. Digital Communication – Simon Haykin, Jon Wiley, 2005.
3. Digital Communications – Ian A. Glover, Peter M. Grant, 2nd Edition, Pearson Edu., 2008.
4. Communication Systems – B.P. Lathi, BS Publication, 2006.

Course Outcomes:

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

- Understand basic components of Digital Communication Systems.
- Design optimum receiver for Digital Modulation techniques.
- Analyze the error performance of Digital Modulation Techniques.
- **Understand the redundancy present in Digital Communication by using various source coding techniques to get selfmemployable**.
- Know about different error detecting and error correction codes like block codes, cyclic codes and convolution codes and to understand advantage of spread spectrum

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(J5416) ANTENNAS AND WAVE PROPAGATION
(Professional Elective – I)

COURSE OBJECTIVES:

1. Understand basic terminology and concepts of Antennas.
2. Understand the design issues, operation of fundamental antennas like Yagi-Uda, Horn antennas and helical structure and also their operation methodology in practice.
3. To learn special antennas such as frequency independent and broad band antennas.
4. To study antenna arrays and antenna measurements.
5. To create awareness about the different types of propagation of radio waves at different frequencies.

UNIT- I: Fundamentals of radiation

Antenna Basics: Introduction, Basic Antenna Parameters - Patterns, Beam Area, Radiation Intensity, Beam Efficiency, Directivty-Gain-Resolution, Antenna Apertures, Effective Height. Related Problems.

Thin Linear Wire Antennas Radiation from Small Electric Dipole, Quarterwave Monopole and Halfwave Dipole – Current Distributions, Field Components, Radiated Power, Radiation Resistance, Beamwidths, Directivity, Effective Area and Effective Height. Natural current distributions, fields and patterns of Thin Linear Center-fed Antennas of Different Lengths, Illustrative Problems. Loop Antennas - Introduction, Small Loop, Comparison of Far Fields of Small Loop and Short Dipole, Radiation Resistances and Directivities of Small and Large Loops (Qualitative Treatment).

UNIT - II:

VHF, UHF AND Microwave Antennas - I: Arrays with Parasitic Elements, Yagi - Uda Arrays, Folded Dipoles & their characteristics, Helical Antennas - Helical geometry, Helix Modes, Practical Design Considerations for Monofilar Helical Antenna in Axial and Normal Modes. Horn Antennas - Types, Fermat's Principle, Optimum Horns, Design Considerations of Pyramidal Horns, Illustrative Problems.

UNIT - III:

VHF, UHF AND Microwave Antennas - II: Microstrip Antennas - Introduction, Features, Advantages and Limitations, Rectangular Patch Antennas - Geometry and Parameters, Characteristics of Microstrip Antennas. Impact of Different Parameters on Characteristics, Reflector Antennas - Introdcution, Flar Sheet and Corner Reflectors, Paraboloidal Reflectors - Geometry, Pattern Characteristics, Feed Methods, Reflector Types - Related Features, Illustrative Problems. Radiation from a traveling wave on a wire. Analysis of Rhombic antenna. Design of Rhombicantennas.

Lens Antennas - Introduction, Geometry of Non-metallic Dielectric Lenses, Zoning, Tolerances, Applications.

UNIT - IV: ANTENNA ARRAYS AND MEASUREMENTS

Antenna Arrays: Point Sources - Definition, Pattern, arrays of 2 Isotropic Sources - Different Cases, Principle of Pattern Multiplication, Uniform Linear Arrays - Broadside Arrays, Endfire Arrays, EFA with Increased Directivity, Derivation of their Characteristics and Comparision, BSAs with Non-unitform Amplitude Distributions - General Considerations and Binomial Arrays, Illustrative Problems.

Antenna Measurements: Introduction, Concepts - Reciprocity, Near and Far Fields, Coordinate System, Sources of Errors. Patterns to be Measured, Pattern Measurement Arrangement, Directivity Measurement, Gain Measurements (by Comparision, Absolute and 3-Antenna Methods

UNIT V PROPAGATION OF RADIO WAVES

Modes of propagation , Structure of atmosphere , Ground wave propagation , Tropospheric propagation ,M-Curves and Duct propagation, Troposcatter propagation , Flat earth and Curved earth concept Sky wave propagation – Virtual height, critical frequency , Maximum usable frequency ,LUF,OF,Skip distance, Fading , Multi hop propagation. Radio noise of terrestrial and extra terrestrial origin. Multipath fading of radio waves. Antennas and propagation for body centric communications.

TEXT BOOK:

1. Antennas for All Applications – John D. Kraus and R. J. Marhefka, and Ahmad S. Khan TMH, New Delhi, 4th ed., (Special Indian Edition) 2010.
2. Electromagnetic Waves and Radiating Systems – E.C. Jordan and K.G. Balmain, PHI, 2nd ed., 2000.

REFERENCES:

1. Edward C.Jordan and Keith G.Balmain‖ Electromagnetic Waves and Radiating Systems‖ Prentice Hall of India, 2006

2. Antennas – John D. Kraus, McGraw-Hill (International Edition), 2nd Ed. 1988.

S. Drabowitch, ―Modern Antennas‖ Second Edition, Springer Publications, 2007.

3.R.E.Collin,‖Antennas and Radiowave Propagation‖, Mc Graw Hill 1985.

4.Constantine.A.Balanis ―Antenna Theory Analysis and Design‖, Wiley Student Edition, 2006.

5.Rajeswari Chatterjee, ―Antenna Theory and Practice‖ Revised Second Edition New Age International Publishers, 2006.

6. 7.Robert S.Elliott ―Antenna Theory and Design‖ Wiley Student Edition, 2006.

8.H.Sizun ―Radio Wave Propagation for Telecommunication Applications‖, First Indian Reprint, Springer Publications, 2007.

OUTCOMES: Upon completion of the course, students will be able to:

1. Explain the various types of antennas and wave propagation.
2. Write about the radiation from a current element.
3. Analyze the antenna arrays, aperture antennas and special antennas such as frequency independent and broad band
4. Understands about the propagation of waves
5. **Measure the Antenna parameters for designing in real time applications.**

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(J5221)POWER ELECTRONICS

(Professional Elective – I)

Pre requisites: To learn this course student should have the concepts on the following subjects: Electrical Circuits-I & II, Electronic Devices and Circuits

Course Objective:

1. To study the Characteristics Power Semi Conductor Devices and Commutation Circuits
2. To study and design the Single phase Half wave and Full wave Controlled Converter
3. To study the Three phase converters with R and RL load and RLE loads
4. To study the Operational Characteristics of AC Voltage Controllers And Cyclo Converters
5. To study the operation of Choppers and Various types of inverters

UNIT – I: Power Semi Conductor Devices and Commutation Circuits

Thyristors – 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 Wave Controlled Converters

Phase control technique – Single phase Line commutated converters – Half wave controlled converters with Resistive, RL load and RLE 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 Fully Controlled Converters

Fully controlled converters, Midpoint and Bridge connections with Resistive, RL loads and RLE 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, RL load voltage and current with R and RL load and RLE loads – 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 midpoint cyclo converters with resistive and inductive loads, Bridge Configuration of cyclo converters- Waveforms.

UNIT – V: Choppers & Inverters

Choppers – 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,D.C Jones Chopper,AC Chopper ,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:

At the end of the course, the students to gets a thorough knowledge on,

1. Distinguish between different types of power semiconductor devices and their characteristics.
2. Analyze single Phase Half wave and full wave controlled converters.
3. Analyze the Three Phase Line Commutated Converters
4. Analyze the AC voltage controllers and Cyclo converters.
5. Analyze DC –DC Choppers and analyze DC-AC Inverters.
6. **To improve the employability**

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III B.Tech I Sem: ECE

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(J5418) BIO MEDICAL ELECTRONICS
(Professional Elective – I)

Unit- I
Brief introduction to human physiology. Biomedical transducers: displacement, velocity, force, acceleration, flow, temperature, potential, dissolved ions and gases.

Unit-II
Bio-electrodes and biopotential amplifiers for ECG, EMG, EEG, etc.

Unit- III
Measurement of blood temperature, pressure and flow. Impedance plethysmography.

Unit-IV
Ultrasonic, X-ray and nuclear imaging.

Unit- V
Prostheses and aids: pacemakers, defibrillators, heart-lung machine, artificial kidney, aids for the handicapped. Safety aspects.

Text/Reference Books:

1. W.F. Ganong, Review of Medical Physiology, 8th Asian Ed, Medical Publishers, 1977.
2. J.G. Websster, ed., Medical Instrumentation, Houghton Mifflin, 1978.
3. A.M. Cook and J.G. Webster, eds., Therapeutic Medical Devices, Prentice-Hall, 1982.

Course Outcomes:

At the end of the course, students will demonstrate the ability to:
1. Understand the application of the electronic systems in biological and medical applications.
2. Understand the practical limitations on the electronic components while handling bio substances.
3. Understand and analyze the biological processes like other electronic processes.
4. **Understand the Diagnosing system by different techniques which is employable**
5. Understand the Prostheses and aids

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(J5420) IC Applications Lab

Part - I: Linear IC Experiments

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

EQUIPMENT REQUIRED:

1. 20 MHz Cathode Ray Oscilloscope.
2. 1 MHz Function Generator (Sine, Square, Triangular and TTL).
3. Bus Connection to all the tables
4. Regulated Power supply- 1No
5. Fixed 5V DC Power supply – 1No.
6. Multimeter / Volt Meter.

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III B. Tech. I Sem : **ECE**

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(J5421) DIGITAL SIGNAL PROCESSING LAB

OBJECTIVES: The student should be made to:

1. **To generate various signals**
2. To implement Linear and Circular Convolution
3. The student will be able to demonstrate the applications of FFT and DFT
4. To implement FIR and IIR filters
5. To demonstrate Finite word length

List of experiments:

Cycle-I Experiments using MATLAB:

1. Generation of Signals
2. Correlation, Linear and circular convolution of two sequences
3. Spectrum Analysis using DFT
4. Calculation of FFT of a signal
5. To find Frequency Response of a given system in (Transfer Function/Differential Equation form)

Cycle-II Experiments:

6. Design of FIR filters (LPF, HPF, BPF) for a given sequence using windows
7. Design of IIR filters (LPF, HPF, BPF, BSF)
8. Implementation of Decimation
9. Implementation of Interpolation
10. Impulse Response of First Order and second order systems
11. Noise removal :Add 3khz and then remove, interference suppression using 400Hz
12. Finite Word length effects
13. Calculating the fundamental frequency from an audio signal .
14. Adaptive Filter

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Equipment Required:

1. Simulation Package : Matlab
2. Hardware : DSP Processor Trainer Kits
3. Cathode Ray Oscilloscope
4. Function Generator

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(J4413) DIGITAL COMMUNICATION LAB

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

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Digital Communication Experiments

1. Pulse Amplitude Modulation and Demodulation(PAM)
2. Pulse width Modulation and Demodulation(PWM)
3. Pulse Position Modulation and Demodulation(PPM)
4. Pulse Code Modulation and Demodulation(PCM)
5. Time Division Multiplexing
6. Delta Modulation and Demodulation
7. Frequency Shift Keying
8. Amplitude Shift Keying
9. Phase Shift Keying
10. Differential Phase Shift keying

Equipment Required:

5. Trainer Kits for the above said experiments
6. Cathode Ray Oscilloscope
7. Function Generator
8. Spectrum Analyzer

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(JMC03)Constitution of India

Course Objectives:

1. The Constitution is the basic and fundamental law
2. To introduce concepts and salient features of the constitution Indian
3. Analyze the Preamble of the Constitution and identify the core values reflected in it;
4. Appreciate the core constitutional values that permeate the salient features of the
5. Indian Constitution; and examine the nature of the Indian federal system and the parliamentary form of govern

Course outcome

1. It also tells us about the rights and also the duties of its citizens.
2. They know about the role, powers of members of local sabha and raj sabha
3. It lays down the rules to govern the country also for entrepreneurs
4. Role and function of election commissioner
5.Power and duties of elected represented s for panchayatraj , ZP, corporation and Importance of democracy

Unit I

Introduction to Constitution‘ meaning of the term,, Indian Constitution: Sources and constitutional history, Features: Citizenship, Preamble, Fundamental Rights and Duties, Directive Principles of State Policy.

Unit II

Union Government and its Administration Structure of the Indian Union: Federalism, Centre-State relationship, President: Role, power and position, PM and Council of ministers, Cabinet and Central Secretariat, Lok Sabha, Rajya Sabha

Unit III

State Government and its Administration Governor: Role and Position, CM and Council of ministers, State Secretariat: Organisation, Structure and Functions

Unit IV

Local Administration District‘s Administration head: Role and Importance, Municipalities:Introduction, Mayor and role of Elected Representative, CEO of Municipal Corporation, Pachayatiraj: Introduction, PRI: Zila parishadh, Elected officials and their roles, CEO Zila parishadh: Position and role, Block level: Organizational Hierarchy (Different departments) village level: Role of Elected and Appointed officials,Importance of grass root democracy

Unit V

Election Commission Election Commission: Role and Functioning, Chief Election Commissioner and Election Commissioners, State Election Commission: Role and Functioning, Institute and Bodies for the welfare of SC/ST/OBC and women.

REFERENCES

1. Books. Recommended
2. Indian Polity‘ by Laxmikanth
3. Indian Administration‘ by Subhash Kashyap
4. _Indian Constitution‘ by D.D. Basu.
5. _Indian Administration‘ by Avasti and Avasti

III B.Tech. I-Sem. ECE **L T P C**
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(J6421) LINEAR CONTROL SYSTEMS

Objective: In this course it is aimed to introduce to

1. The students the principles and applications of control systems in everyday life.
2. The basic concepts of block diagram reduction.
3. Time domain analysis solutions to time invariant systems.
4. Deals with the different aspects of stability analysis of systems in frequency domain and time domain.
5. Concept on 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.

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TRANSFER FUNCTION REPRESENTATION:

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 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-IV 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.

UNIT –V 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

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.

OUTCOMES:

After going through this course, the student gets knowledge on

1. Open loop and closed loop systems, concept of feedback in control systems, mathematical modeling and transfer function derivations of translational and rotational systems and transfer functions of servomotors and concepts of synchros.
2. Transfer function representation through block diagram algebra and signal flow graphs,
3. Time response analysis of different ordered systems through their characteristic equation and time-domain specifications.
4. Stability analysis of control systems in s-domain through R-H criteria and root-locus techniques.
5. Frequency response analysis through bode diagrams.

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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III B.Tech II Sem.: ECE **L T P C**

3 0 0 3

(J6423) VLSI TECHNOLOGY

Course Objectives:

The course is designed

1. To provide an introduction to the fundamental principles and techniques in VLSI technology
2. To provide techniques related to design and layout Tools.
3. To know the process of design and manufacturing.
4. To provide knowledge related to Integrated circuits design rules and design procedure.
5. To provide the knowledge about advanced MOSFET design process

UNIT –I:
Introduction to MOS Technologies:
MOS, CMOS, BiCMOS Technology. Basic Electrical Properties of MOS, CMOS & BiCMOS Circuits: Ids – Vds relationships, Threshold Voltage VT, Gm, Gds and ωo, Pass Transistor, MOS, CMOS & Bi CMOS Inverters, Zpu/Zpd, MOS Transistor circuit model, Latch-up in CMOS circuits.

UNIT –II:
Layout Design and Tools:
Transistor structures, Wires and Vias, Scalable Design rules, Layout Design tools.
Logic Gates & Layouts:
Static Complementary Gates, Switch Logic, Alternative Gate circuits, Low power gates, Resistive and Inductive interconnect delays.

UNIT –III:
Fabrication process
Overview of semiconductor industry, Stages of Manufacturing, Process and product trends, Crystal growth, Basic wafer fabrication operations, process yields, Semiconductor material preparation, Basic wafer fabrication operations, Yield measurement, Contamination sources, Clean room construction.

Oxidation and Photolithography, Doping and Depositions, Metallization. Ten step patterning process, Photo resists, physical properties of photo resists, Storage and control of photo resists, photo masking process, Hard bake, develop inspect, Dry etching Wet etching, resist stripping

UNIT –IV
Doping and depositions: Diffusion process steps, deposition, Drive-in oxidation, Ion implantation-1, Ion implantation-2, CVD basics, CVD process steps, Low pressure CVD systems, Plasma enhanced CVD systems, Vapour phase epitaxy, molecular beam epitaxy.

UNIT –V

Design rules

Design rules and Scaling, BICMOS ICs: Choice of transistor types, pnp transistors, Resistors, capacitors,

Packaging: Chip characteristics, package functions, package operations

TEXT BOOKS:

1. Peter Van Zant, Microchip fabrication, McGraw Hill, 1997.
2. C.Y. Chang and S.M. Sze, ULSI technology, McGraw Hill, 2000

REFERENCE BOOKS:

1. Micro Electronics circuits Analysis and Design 2nd Edition, Muhammad H Rashid, CENAGE Learning2011.
2. Eugene D. Fabricius, Introduction to VLSI design, McGraw Hill, 1999
3. Wani-Kai Chen (editor), The VLSI Hand book, CRI/IEEE press, 2000
4. S.K. Gandhi, VLSI Fabrication principles, John Wiley and Sons, NY, 1994

Course Outcomes

Upon completing the course, the student will be able to:

1. Understand the fundamentals of VLSI design flow.
2. Understand the fundamentals behind integrated circuit design and manufacturing process.
3. Understand the basic principles of design rules and scaling standards.
4. Apply the acquired knowledge to projects at work.
5. **Take advanced courses in this area for more employable**.

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III B.Tech. II Sem: ECE **L T P C**

3 0 0 3

(J6424) MICRO PROCESSORS AND MICRO CONTROLLERS

COURSE OBJECTIVES:

6. Understanding the importance of micro processors and micro controllers
7. Understanding the application development skills by using various instructions
8. Understanding the interfacing of devices with processors and controllers
9. Understanding the development of basic Real Time Operating System.
10. Understanding the advanced micro processors and controllers

UNIT-I

Introduction to 8085 Architecture

8086 Architecture: 8086 Architecture-Functional diagram, Register Organization, Memory Segmentation, Programming Model, Memory addresses, Physical Memory Organization, Pin Configuration of 8086.

UNIT-II

Instruction Set and Assembly Language Programming of 8086: Instruction formats, Addressing modes, Instruction Set, Assembler Directives, Macros, and Simple Programs involving Logical, Branch and Call Instructions, Sorting, String Manipulations.

UNIT -III:

I/O Interface : 8255PPI, Various modes of operation and Interfacing to 8086(Keyboard, Display, ADC & DAC).

Interrupt structure of 8086 :8259 PICU, Vector Interrupt Table, Interrupt Service Routine.

Communication Interface: Serial Communication Standards, Serial Data Transfer Schemes, 8251 USART architecture and interfacing

UNIT –IV:

Introduction to Microcontrollers: Overview of 8051 Microcontroller, Architecture, I/O Ports, Memory Organization, Addressing Modes and Instruction set of 8051.

8051 Real Time Control: Programming Timer Interrupts, Programming External Hardware Interrupts, Programming the Serial Communication Interrupts, Programming 8051 Timers and Counters

UNIT –V:

ARM Architecture: ARM Processor fundamentals, ARM Architecture – Register, CPSR, Pipeline, exceptions and interrupts interrupt vector table, ARM instruction set – Data processing, Branch instructions, load store instructions, Software interrupt instructions, Program status register instructions, loading constants, Conditional execution, Introduction to Thumb instructions.

TEXT BOOKS:

1. Micro Processor Architecture Programming and Applications with the 8085-Ramesh Goankar, 5th Edition,Penram International Publishing.

2. Advanced Microprocessors and Peripherals – A. K. Ray and K.M. Bhurchandani, TMH, 2nd Edition 2006.
3. The 8051 Microcontroller, Kenneth. J. Ayala, Cengage Learning, 3rd Ed.
4. ARM System Developers guide, Andrew N SLOSS, Dominic SYMES, Chris WRIGHT, Elsevier, 2012

REFERENCE BOOKS:

1. Microprocessors and Interfacing, D. V. Hall, TMGH, 2nd Edition 2006.
2. Introduction to Embedded Systems, Shibu K.V, TMH, 2009
3. The 8051Microcontrollers, Architecture and Programming and Applications -K.Uma Rao, Andhe Pallavi, Pearson, 2009.
4. ARM Reference Manuals

Course Outcomes:

upon completion of this course :

1. The student will learn internal architecture and organization of 8085 and 8086.
2. The student will learn instruction set, Addressing Modes and Assembly level language programming
3. **The student understands how to interface the various I/O and Communication interface modules and apply in real time applications**.
4. The student will learn the internal Architecture, Register Organization and instruction set of 8051 microcontrollers and their interfacing.
5. Understands advance microcontrollers and their importance in the field of Embedded systems and IOT.

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(J6425) ELECTRONIC MEASUREMENTS AND INSTRUMENTATION

COURSE OBJECTIVES:

11. To understand the basic functional elements of instrumentation
12. Understanding the signal generators and wave analyzers
13. To understand various storage and display devices
14. To introduce various transducers and the data acquisition systems
15. To use the different bridges measuring techniques and the measurement of different physical parameters

UNIT-I

Basic Measurement Concepts:

Functional Elements of Measuring System, Performance Characteristics-static & dynamic, Errors in Measurements, Statistical Analysis, PMMC, DC Voltmeters, DC Ammeters, DMM, Ohmmeter, True RMS Responding Voltmeter, Meter Protection, DVMs-Successive Approximation, Linear Ramp, Dual Slope

UNIT-II

Signal Generators and Analyzers:

AF and RF Generators, Function Generator, Pulse and Square Wave Generators, Sweep Frequency Generator
AF and HF Wave Analyzers, Harmonic Distortion Analyzer, Heterodyne Wave Analyzers, Spectrum Analyzer

UNIT -III:

Oscilloscopes: CRO, CRT, Time Base Circuits, Delay Line, Lissajous Figures, CRO Probes, Dual Trace CRO, Dual Beam CRO, Sampling Oscilloscope, Storage Oscilloscope-Analog & Digital, Applications of Oscilloscopes

UNIT –IV:

Transducers: Classification, Resistive, Capacitive, Inductive, Piezoelectric, Photoelectric RTD, Thermocouples, Hotwire Anemometer, LVDT, Synchros, Data Acquisition Systems, Interfacing Transducers

UNIT –V:

Bridges: Wheatstone, Kelvin, Maxwell, Hay, Anderson, Schering

Measurement of Non Electrical Quantities: Force, Velocity, Displacement, Humidity, Moisture, Liquid Level

TEXT BOOKS:

5. H.S. Kalsi, ‗Electronic Instrumentation‘, Tata McGraw Hill, 1995.
6. Modern Electronic Instrumentation and Measurement Techniques:A.D.Helbincs,W.D. Cooper:PHI 5th Edition 2003

REFERENCE BOOKS:

5. D.V.S. Moorthy, ‗Transducers and Instrumentation‘, Prentice Hall of India Pvt Ltd,
6. David A. Bell, Electronic Instrumentation and measurements, Prentice Hall of India
7. Industrial Instrumentation: T.R.Padmanabham Springer 2009
8. A.K. Sawhney, ‗A Course in Electrical & Electronic Measurements & Instrumentation‘, Dhanpat Rai and Co, 2004.

***Course Outcomes*:**

Upon a successful completion of this course, the student will be able to.

1. Describe the fundamental concepts and principles of instrumentation.
2. Explain the operations of the various instruments required in measurements.
3. **Apply the measurement techniques for different types of tests in real era**.
4. To select specific instrument for specific measurement function.
5. Learners will apply knowledge of different oscilloscopes like CRO, DSO.Students will understand functions, specification, and applications of signal analyzing instruments.

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III B.Tech. II Sem. ECE **L T P C**

(J6426) INFORMATION THEORY AND CODING
(Professional Elective-II)

Unit-I
Basics of information theory, entropy for discrete ensembles; Shannon's noiseless Coding theorem; Encoding of discrete sources.

Unit-II
Markov sources; Shannon's noisy coding theorem and converse for discrete channels; Calculation of channel capacity and bounds for discrete channels; Application to continuous channels.

Unit-III
Techniques of coding and decoding; Huffman codes and uniquely detectable codes; Cyclic codes, Convolutional arithmetic codes.

Unit-IV

Text/Reference Books:
1. N. Abramson, Information and Coding, McGraw Hill, 1963.
2. M. Mansurpur, Introduction to Information Theory, McGraw Hill, 1987.
3. R.B. Ash, Information Theory, Prentice Hall, 1970.
4. Shu Lin and D.J. Costello Jr., Error Control Coding, Prentice Hall, 1983.

Course Outcomes:
At the end of the course, students will demonstrate the ability to:
1. Understand the concept of information and entropy
2. Understand Shannon‘s theorem for coding
3. Calculation of channel capacity
4. Apply coding techniques for real world problems

(J6427) SPEECH AND AUDIO PROCESSING
(Professional Elective – II)

III B.Tech II Sem.: ECE **L T P C**

3 0 0 3

Unit-I

Introduction- Speech production and modeling - Human Auditory System; General structure of speech coders; Classification of speech coding techniques – parametric, waveform and hybrid ; Requirements of speech codecs –quality, coding delays, robustness.

Unit-II

Speech Signal Processing- Pitch-period estimation, all-pole and all-zero filters, convolution; Power spectral density, periodogram, autoregressive model, autocorrelation estimation. Linear Prediction of Speech- Basic concepts of linear prediction; LinearPrediction Analysis of non-stationary signals – prediction gain, examples; Levinson-Durbin algorithm; Long term and short-term linear prediction models; Moving average prediction.

Unit-III

Speech Quantization- Scalar quantization–uniform quantizer, optimum quantizer, logarithmic quantizer, adaptive quantizer, differential quantizers; Vector quantization – distortion measures, codebook design, codebook types.

Unit-IV

Scalar Quantization of LPC- Spectral distortion measures, Quantization based on reflection coefficient and log area ratio, bit allocation; Line spectral frequency – LPC to LSF conversions, quantization based on LSF. Linear Prediction Coding- LPC model of speech production; Structures of LPCencoders and decoders; Voicing detection; Limitations of the LPC model.

Unit-V

Code Excited Linear Prediction-CELP speech production model; Analysis-by-synthesis; Generic CELP encoders and decoders; Excitation codebook search – state-save method, zero-input zerostate method; CELP based on adaptive codebook, Adaptive Codebook search; Low Delay CELP
and algebraic CELP.

Speech Coding Standards-An overview of ITU-T G.726, G.728 and G.729standards

Text/Reference Books:

1. –Digital Speech‖ by A.M.Kondoz, Second Edition (Wiley Students_ *Edition), 2004.*

2. –Speech Coding Algorithms: Foundation and Evolution of Standardized Coders‖, W.C.
Chu, WileyInter science, 2003.

Course Outcomes:

At the end of the course, students will demonstrate the ability to:

1. Mathematically model the speech signal in real world problems

2. Analyze the quality and properties of speech signal.

3. Modify and enhance the speech and audio signals.

4. Analyze LPC model

5. Understand different coding standards

(J6428) NANO ELECTRONICS
(Professional Elective – II)

III B.Tech II Sem.: ECE **L T P C**
3 0 0 3

Unit-I
Introduction to nanotechnology, meso structures,Basics of Quantum Mechanics: Schrodinger equation,

Unit-II
Density of States. Particle in a box Concepts, Degeneracy. Band Theory of Solids. Kronig-Penny Model. Brillouin Zones. Shrink-down approaches: Introduction, CMOS Scaling.

Unit-III
The nanoscale MOSFET, Finfets, Vertical MOSFETs, limits to scaling, system integration limits (interconnect issues etc.).

Unit-IV
Resonant Tunneling Diode, Coulomb dots, Quantum blockade, Single electron transistors,Carbon nanotube electronics,

Unit-V
Bandstructure and transport, devices, applications, 2D semiconductors and electronic devices, Graphene, atomistic simulation.

Text/ Reference Books:

1. G.W. Hanson, Fundamentals of Nanoelectronics, Pearson, 2009.
2. W. Ranier, Nanoelectronics and Information Technology (Advanced Electronic Materialand Novel Devices), Wiley-VCH, 2003.
3. K.E. Drexler, Nanosystems, Wiley, 1992.
4. J.H. Davies, The Physics of Low-Dimensional Semiconductors, Cambridge University Press, 1998.
5. C.P. Poole, F. J. Owens, Introduction to Nanotechnology, Wiley, 2003.

Course Outcomes:
At the end of the course, students will demonstrate the ability to:
1. Understand various aspects of nano-technology and the processes involved in making nano components and material.
2. Leverage advantages of the nano-materials and appropriate use in solving practical problems.
3. Understand various aspects of nano-technology and the processes involved in making nano components and material.
4. **Leverage advantages of the nano-materials and appropriate use in solving practical problems**.
5. Applications of Nano Electronics

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III B.Tech I-sem : ECE **L T P C**

0 0 2 1

(J6429) e-CAD and VLSI Laboratory

List of Experiments:
Design and implementation of the following CMOS digital/analog circuits using Xilinx/Tanner Tools.

e-CAD

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

VLSI Program

1. Basic logic gates
2. CMOS inverter
3. CMOS NOR/ NAND gates
4. CMOS XOR and MUX gates
5. Static / Dynamic logic circuit (register cell)
6. Latch
7. Pass transistor
8. Layout of any combinational circuit (complex CMOS logic gate).

(J6430) MICRO PROCESSORS AND MICRO CONTROLLERS LAB

III B.Tech. II Sem: ECE **L T P C**
0 0 2 1

Cycle 1: Using 8086 Processor Kits and/or Assembler (10 Weeks)

1. Write and execute an Assembly language Program (ALP) to 8086 processor to add, subtract and multiplication.
2. Write and execute an Assembly language Program (ALP) to 8086 processor to divide a 32 bit unsigned Number.
3. Write and execute an Assembly language Program (ALP) to 8086 processor to sort the given array of Numbers.
4. Write and execute an Assembly language Program (ALP) to 8086 processor to Bit level Logical Operations, Rotate, Shift, Swap and Branch Operations.
5. Write and execute an Assembly language Program (ALP) to 8086 processor to pick the median from the given String.
6. Write and execute an Assembly language Program (ALP) to 8086 processor to find the length of a given string.
7. Write and execute an Assembly language Program (ALP) to 8086 processor to reverse the given string.
8. Write and execute an Assembly language Program (ALP) to 8086 processor to verify the password.
9. Write and execute an Assembly language Program (ALP) to 8086 processor to insert or delete a character?
10. Write and execute an Assembly language Program (ALP) to 8086 processor to call a delay subroutine and display the character on the LED display.
11. Interface a keypad to 8086 microprocessor and display the key number pressed on the 7- segment display which is also interfaced to 8086.
12. Write an interrupt service routine to 8086 whenever there is an interrupt request on interrupt pin, which displays "hello" on a LCD.
13. Interface an 8086 microprocessor trainer kit to PC and establish a communication between them through RS 232.
14. Interface DMA controller to 8086 and transfer bulk data from memory to I/O device.
15. Interface a stepper motor to 8086 and operate it in clockwise and anti-clock wise by choosing variable step-size.
16. Interface an 8 bit ADC to 8086 and generate digital output and store it in memory for the given square/ ramp/ triangle wave form inputs.

Cycle 2: Using 8051 Microcontroller Kit (6 weeks)

- Introduction to Keil IDE

1. Assembly Language Programs to Perform Arithmetic (Both Signed and Unsigned) 16 Bit Data Operations, Logical Operations (Byte and Bit Level Operations), Rotate, Shift, Swap and Branch Instructions
2. Time delay Generation Using Timers of 8051.
3. Serial Communication from / to 8051 to / from I/O devices.
4. Program Using Interrupts to Generate Square Wave 10 KHZ Frequency on P2.1 Using Timer0 8051 in 8bit Auto reload Mode and Connect a 1HZ Pulse to INT1 pin and Display on Port0.Assume Crystal Frequency as 11.0592MHZ

Equipment Required:
1.8086 Microprocessor Trainer Kits
2.8051 Microcontroller Trainer Kits
3. Interfacing Modules : ADC,DAC,Temparature Controllers etc.
4. Interfacing Cards : 8255, 8529, 8257.

B.Tech. IV Year I Sem.: ECE **L T P C**
2 1 0 3

(J7431) MICRO WAVE AND OPTICAL COMMUNICATION ENGINEERING

Course Objectives:

- To understand the Micro-wave communication system.
- To understand the need of S Parameters.
- To study prapogation of light through Optical fiber.
- Understand the working principle of optical sources, detector.
- To study the various optical modulation techniques..

UNIT I

MICROWAVE AMPLIFIERS AND OSCILLATORS

Introduction to microwave frequency spectrum and bands- Application and limitation–Klystron amplifier–Reflex Klystron Oscillator–TWT amplifiers–Magnetron Oscillator–Gunn oscillator.

UNIT II

MICROWAVE COMPONENTS

Rectangular Waveguide, field expressions TE/TM and expression for frequency wavelength and phase constants,Cutoff Frequency and Dominant Modes, S parameters, Directionalcoupler–EplaneTee-H-planeTee–MagicTee-Circulators–Isolators Attenuators–PhaseShifters–Avalanchebreakdown devices-PINdiode and TUNNEL diode Power,VSWR- Impedance Measurements.

UNIT III

INTRODUCTION TO OPTICAL FIBERS AND TRANSMISSION CHARACTERISTICS

Evolution of fiber optic system-Element of an Optical Fiber Transmission link--Total internal reflection ,The propagation of light in optical waveguides–Classification of optical fibers–Numerical aperture, Step index and Graded index fiber–Modes in cylindrical fiber–Linearly polarized modes, Attenuation: Absorption, Scattering, Bending losses. Modal dispersion and chromatic dispersion–Single mode fiber-waveguide dispersion.

UNIT IV

OPTICAL TRANSMITTERS AND RECEIVERS

Optical Sources:-Light source materials–LED homo and hetero structures–surface and edge emitters–Quantum efficiency–Injection Laser Diode–Modes and threshold condition–Structures and Radiation Pattern. Optical detectors:–Physical principles–PIN and APD diodes–Photo detector noise.

UNIT V

OPTICAL COMMUNICATION SYSTEMS AND DESIN

Transmittermodule:Signal formats–Electronicdrivingcircuit-Modulationcircuit external modulators. Amplifier,EDFA,Semiconductor ,Optical Amplifier,

Receiver Module: Opticalfrontend–Quantizer–Decision circuit. Optical Link Design: Point-to-point links–System considerations–Link Power budget–Rise time budget.

Text book(s) and/or required materials

1 Samuel Y. Liao, ―Microwave Devices and Circuits‖, 3rd edition, Pearson education, 2011 reprint.
2 Keiser G, ―Optical Fiber Communication Systems‖, 4th edition, Tata McGraw Hill. Edition, 2010.
3 Collin.R.E, ―Foundations for Microwave Engineering‖, 2nd edition, Tata McGraw Hill, 2006.
4 Djafar. K. Mynbaev Lowell and Scheiner,―Fiber Optic Communication Technology‖, Pearson Education Asia, 9thimpression, 2011.
5 John Powers, ―An Introduction to Fiber optic Systems‖, 2nd edition, Tata McGraw Hill, 2010

Course Outcomes:

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

- Understand basic components of Micro-Wave Communication Systems.
- Understand S Parameters for different Micro-Wave Devices.
- Undestand basics of Optical Fiber.
- **Understand the working principle of optical sources, detector used in real time applications**.
- Understand various Optical Modulation techiniques

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

(J7528) COMPUTER NETWORKS

B.Tech. III Year II-SEM CSE
B. Tech. IV Year I Sem ECE

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Course Objectives:
This course will develop students‘ knowledge in/on
1.Computer network architecture and reference model
2.Different types of data link and medium access control protocols
3.Developing routing algorithms and internetworking
4.Network protocols for real time applications
5.Protocols used in Transport and Application layers

Syllabus:

UNIT - I
Overview of the Internet: Protocol, Layering Scenario, TCP/IP Protocol Suite: The OSI Model, Internet history standards and administration; Comparison of the OSI and TCP/IP reference model.
Physical Layer: Guided transmission media, wireless transmission media.
Data Link Layer - design issues, CRC codes, Elementary Data Link Layer Protocols, sliding window protocol
UNIT - II
Multi Access Protocols - ALOHA, CSMA, Collision free protocols, Ethernet- Physical Layer, Ethernet Mac Sub layer, data link layer switching & use of bridges, learning bridges, spanning tree bridges, repeaters, hubs, bridges, switches, routers and gateways.
UNIT - III
Network Layer: Network Layer Design issues, store and forward packet switching connection less and connection oriented networks-routing algorithms-optimality principle, shortest path, flooding, Distance Vector Routing, Control to Infinity Problem, Hierarchical Routing, Congestion control algorithms, admission control.
UNIT - IV
Internetworking: Tunneling, Internetwork Routing, Packet fragmentation, IPv4, IPv6 Protocol, IP addresses, CIDR, IMCP, ARP, RARP, DHCP.
Transport Layer: Services provided to the upper layers elements of transport protocol-addressing connection establishment, connection release, Connection Release, Crash Recovery.
UNIT - V
The Internet Transport Protocols UDP-RPC, Real Time Transport Protocols,
The Internet Transport Protocols- Introduction to TCP, The TCP Service Model, The TCP Segment Header, The Connection Establishment, The TCP Connection Release, The TCP Connection Management Modeling, The TCP Sliding Window, The TCP Congestion Control, The future of TCP.
Application Layer- Introduction, providing services, Applications layer paradigms, Client server model, Standard client-server application-HTTP, FTP, electronic mail, TELNET, DNS, SSH

Text Books:

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

References Books:

1. An Engineering Approach to Computer Networks - S. Keshav, 2nd Edition, Pearson Education.
2. Understanding communications and Networks, 3rd Edition, W. A. Shay, Cengage Learning.
3. Introduction to Computer Networks and Cyber Security, Chwan-Hwa (John) Wu, J. David Irwin, CRC Press.
4. Computer Networks, L. L. Peterson and B. S. Davie, 4th edition, ELSEVIER.
5. Computer Networking: A Top-Down Approach Featuring the Internet, James F. Kurose, K. W. Ross, 3rd Edition, Pearson Education.

Course Outcomes:

Upon completion of this course, students will be able to…

1.Demonstrate computer network architecture, OSI and TCP/IP reference models

2.Determine types of data link and medium access control protocols

3.Use Routing algorithms and internetworking

4.**Design network protocols for real time application**

5.Understand internals of main protocols such as HTTP, FTP, SMTP, TCP, UDP, IP

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IV B.Tech I Sem: ECE **L T P C**

3 0 0 3

(J7432) ADAPTIVE SIGNAL PROCESSING

(Professional Elective-III)

Unit-I

General concept of adaptive filtering and estimation, applications and motivation, Review of probability, random variables and stationary random processes, Correlation structures, properties of correlation matrices.

Unit-II

Optimal FIR (Wiener) filter, Method of steepest descent, extension to complex valued The LMS algorithm (real, complex), convergence analysis, weight error correlation matrix, excess mean square error and mis-adjustment

Unit-III

Variants of the LMS algorithm: the sign LMS family, normalized LMS algorithm, block LMS and FFT based realization, frequency domain adaptive filters, Sub-band adaptive filtering. Signal space concepts - introduction to finite dimensional vector space theory, subspace, basis, dimension, linear operators, rank and nullity, inner product space, orthogonality, Gram- Schmidt orthogonalization, concepts of orthogonal projection, orthogonal decomposition of vector spaces.

Unit-IV

Vector space of random variables, correlation as inner product, forward and backward projections, Stochastic lattice filters, recursive updating of forward and backward prediction errors, relationship with AR modeling, joint process estimator, gradient adaptive lattice.

Unit-V

Introduction to recursive least squares (RLS), vector space formulation of RLS estimation, pseudo-inverse of a matrix, time updating of inner products, development of RLS lattice filters, RLS transversal adaptive filters. Advanced topics: affine projection and subspace based adaptive filters, partial update algorithms, QR decomposition and systolic array.

Text/Reference Books:

1. S. Haykin, Adaptive filter theory, Prentice Hall, 1986.
2. C.Widrow and S.D. Stearns, Adaptive signal processing, Prentice Hall, 1984.

Course Outcomes:

At the end of the course, students will demonstrate the ability to:

1. **Understand the non-linear control and the need and significance of changing the control parameters w.r.t. real-time situation**.
2. Mathematically represent the _adaptability requirement‘.
3. Understand the mathematical treatment for the modeling and design of the signal processing systems.
4. Understand the Joint process estimator and gradient adaptive lattice
5. Understand and apply RLS algorithms to different signal estimators

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

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IV B.Tech I Sem: ECE **L T P C**

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(J7433) MOBILE COMMUNICATION NETWORKS

(Professional Elective- III)

Unit-I

Cellular concepts- Cell structure, frequency reuse, cell splitting, channel assignment, handoff, interference, capacity, power control; Wireless Standards: Overview of 2G and 3G cellular standards.

Unit-II

Signal propagation-Propagation mechanism- reflection, refraction, diffraction and scattering, large scale signal propagation and lognormal shadowing. Fading channels-Multipath and small scale fading- Doppler shift, statistical multipath channel models, narrowband and wideband fading models, power delay profile, average and rms delay spread, coherence bandwidth and coherence time, flat and frequency selective fading, slow and fast fading, average fade duration and level crossing rate. Capacity of flat and frequency selective channels.

Unit-III

Antennas- Antennas for mobile terminal monopole antennas, PIFA, base station antennas and arrays. Multiple access schemes-FDMA, TDMA, CDMA and SDMA. Modulationschemes- BPSK, QPSK and variants, QAM, MSK and GMSK, multicarrier modulation, OFDM.

Unit-IV

Receiver structure- Diversity receivers- selection and MRC receivers, RAKEreceiver, equalization: linear-ZFE and adaptive, DFE. Transmit diversity-Altamonte scheme. MIMO and space time signal processing, spatial multiplexing, diversity/multiplexing tradeoff.

Unit-V

Performance measures- Outage, average snr, average symbol/bit error rate. System examples- GSM, EDGE, GPRS, IS-95, CDMA 2000 and WCDMA.

Text/Reference Books:

1. WCY Lee, Mobile Cellular Telecommunications Systems, McGraw Hill, 1990.
2. WCY Lee, Mobile Communications Design Fundamentals, Prentice Hall, 1993.
3. Raymond Steele, Mobile Radio Communications, IEEE Press, New York, 1992.
4. AJ Viterbi, CDMA: Principles of Spread Spectrum Communications, Addison Wesley,1995.
5. VK Garg &JE Wilkes, Wireless & Personal Communication Systems, Prentice Hall,1996.

Course Outcomes:

At the end of the course, students will demonstrate the ability to:

1. Understand the working principles of the mobile communication systems.
2. Understand the relation between the user features and underlying technology.
3. **Analyze mobile communication systems for improved performance in real world**

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B.Tech IV Year I-sem.ECE **L T P C**

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(J7434) IMAGE AND VIDEO PROCESSING

(Professional Elective - III)

Course objectives:

This course will develop the knowledge in / on

1. Basic steps of image processing, pixels.
2. Image enhancement methods such as spatial and frequency domain enhancement.
3. Image segmentation Image compression fundamentals and compression models.
4. 2-D motion estimation and coding techniques.
5. Basic steps of video processing and 3-D motion models.

UNIT –I:

Fundamentals of Image Processing:

Basic steps of Image Processing System Sampling and Quantization of an image, Basic relationship between pixels.

UNIT –II:

Image Enhancement:

Spatial domain methods: Histogram processing, Fundamentals of Spatial filtering, Smoothing spatial
filters, Sharpening spatial filters.

Frequency domain methods: Basics of filtering in frequency domain, image smoothing, image sharpening, Selective filtering.

UNIT –III:

Image Segmentation:

Segmentation concepts, Point, Line and Edge Detection, Thresholding, Region based segmentation

Image Compression: Image compression fundamentals -Coding Redundancy, Spatial and Temporal redundancy

Compression models: Lossy & Lossless, Huffman coding, , Bit plane coding, Transform coding, Predictive coding, Wavelet coding, Lossy Predictive coding, JPEG Standards.

UNIT –IV:

2-D Motion Estimation:

Optical flow, General Methodologies, Pixel Based Motion Estimation, Block-Matching Algorithm, and Mesh based Motion Estimation, Global Motion Estimation; Region based Motion Estimation, Multi resolution motion estimation,

Waveform based coding, Block based transform coding, Predictive coding, Application of motion estimation in Video coding.

UNIT -V:

Basic Steps of Video Processing:

Analog Video, Digital Video. Time-Varying Image Formation models: Three-Dimensional Motion Models, Geometric Image Formation, Photometric Image Formation, Sampling of Video signals, Filtering operations.

TEXT BOOKS:

1. Digital Image Processing –Gonzalez and Woods, 3rdEd., Pearson.
2. Video Processing and Communication –Yao Wang, Joem Ostermann and Ya–quin Zhang. stEd.,PH Int.

REFRENCE BOOKS:

1. Digital Image Processing and Analysis-Human and Computer Vision Application with CVIP Tools - Scotte Umbaugh, 2ndEd, CRC Press, 2011.
2. Digital Video Processing –M. Tekalp, Prentice Hall International.
3. Digital Image Processing –S.Jayaraman, S.Esakkirajan, T.Veera Kumar –TMH, 2009.
4. Multidimentional Signal, Image and Video Processing and Coding –John Woods, 2ndEd, Elsevier.
5. Digital Image Processing with MATLAB and Labview –Vipula Singh, Elsevier.
6. Video Demystified –A Hand Book for the Digital Engineer –Keith Jack, 5thEd., Elsevier.

Course outcomes:

Upon completion of the subject student will be able to

1. Understand the basic steps of image processing, pixels .
2. Familiarize Image enhancement methods such as spatial and frequency domain enhancement
3. Understand the Image Segmentation, Image compression fundamentals and compression models
4. Understand the 2-D motion estimation and coding techniques
5. Understand the basic steps of video processing and 3-D motion models
6. **To improve the employability**

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(J7435) HIGH SPEED ELECTRONICS

(Professional Elective - IV)

Unit-I

Transmission line theory (basics) crosstalk and nonideal effects; signal integrity: impact of packages, vias, traces, connectors; non-ideal return current paths, high frequency power delivery

Unit-II

methodologies for design of high speed buses; radiated emissions and minimizing system noise; Noise Analysis: Sources, Noise Figure, Gain compression, Harmonic distortion, Intermodulation,Cross-modulation, Dynamic range Devices: Passive and active, Lumped passive devices (models), Active (models,low vs highfrequency)

Unit-III

RF Amplifier Design, Stability, Low Noise Amplifiers, Broadband Amplifiers (and Distributed) Power Amplifiers, Class A, B, AB and C, D E Integrated circuit realizations, Cross-over distortion Efficiency RF power output stages

Unit-IV

Mixers –Upconversion Downconversion, Conversion gain and spurious response. Oscillators Principles.PLL Transceiver architectures

Unit-V

Printed Circuit BoardAnatomy, CAD tools for PCB design, Standard fabrication, Microvia Boards. Board Assembly: Surface Mount Technology, Through Hole Technology, Process Control and Design challenges.

Text/Reference Books:

1. Stephen H. Hall, Garrett W. Hall, James A. McCall –High-Speed Digital System Design: A Handbook of Interconnect Theory and Design Practices‖, August 2000, Wiley-IEEE Press

2. Thomas H. Lee, –The Design of CMOS Radio-Frequency Integrated Circuits‖, CambridgeUniversity Press, 2004, ISBN 0521835399.

3. Behzad Razavi, –RF Microelectronics‖, Prentice-Hall 1998, ISBN 0-13-887571-5.

4. Guillermo Gonzalez, –Microwave Transistor Amplifiers‖, 2nd Edition, Prentice Hall.

5. Kai Chang, –RF and Microwave Wireless systems‖, Wiley.

6. R.G. Kaduskar and V.B.Baru, Electronic Product design, Wiley India, 2011

Course Outcomes:

At the end of the course, students will demonstrate the ability to:

1. **Understand significance and the areas of application of high-speed electronics circuits**.
2. Understand the properties of various components used in high speed electronics
3. Design High-speed electronic system using appropriate components.

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(J7436) WAVELETS

Unit- I:
Introduction to time frequency analysis; the how, what and why about wavelets, Short-time Fourier transform, Wigner-Ville transform.
Unit-II:
Continuous time wavelet transform, Discrete wavelet transform, tiling of the time-frequency plane and wave packet analysis, Construction of wavelets.
Unit-II:
Multiresolution analysis. Introduction to frames and biorthogonal wavelets, Multirate signal processing and filter bank theory.
Unit-IV
Application of wavelet theory to signal denoising, image and video compression, multi-tone digital communication, transient detection.

Text/Reference Books:
1. Y.T. Chan, Wavelet Basics, Kluwer Publishers, Boston, 1993.
2. I. Daubechies, Ten Lectures on Wavelets, Society for Industrial and Applied Mathematics, Philadelphia, PA, 1992.
3. C. K. Chui, An Introduction to Wavelets, Academic Press Inc., New York, 1992.
4. Gerald Kaiser, A Friendly Guide to Wavelets, Birkhauser, New York, 1995.
5. P. P. Vaidyanathan, Multirate Systems and Filter Banks, Prentice Hall, New Jersey, 1993.
6. A.N. Akansu and R.A. Haddad, Multiresolution signal Decomposition: Transforms, Subbands and Wavelets, Academic Press, Oranld, Florida, 1992.
7. B.Boashash, Time-Frequency signal analysis, In S.Haykin, (editor), Advanced Spectral Analysis, pages 418--517. Prentice Hall, New Jersey, 1991.

Course Outcomes:
At the end of the course, students will demonstrate the ability to:
1. Understand time-frequency nature of the signals.
2. Apply the concept of wavelets to practical problems.
3. **Mathematically analyze the systems or process the signals using appropriate wavelet functions**.

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(J7437) EMBEDDED SYSTEMS
(Professional Elective-IV)

Course Objective:

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

1. Understand the basics of an embedded system
2. Program of an embedded system
3. To learn the method of designing an embedded system for any type of applications
4. To understand operating systems concepts, types and choosing RTOS
5. 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 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, Task Synchronization Techniques and issues, Device drivers, How to choose an RTOS.

Text Books:

1.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:

1. Understand and design embedded systems
2. Learn basic of OS and RTOS
3. **Understand types of memory and interfacing to external world**
4. Understand embedded firmware design approaches.
5. Understands different operating systems for Embedded Systems

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(J7438) ERROR CORRECTING CODES
(Professional Elective-V)

Unit-I

Linear block codes: Systematic linear codes and optimum decoding for the binary symmetric channel; Generator and Parity Check matrices, Syndrome decoding on symmetric channels;

Unit-II

Hamming codes; Weight enumerators and the McWilliams identities; Perfect codes, Introduction to finite fields and finite rings;factorization of (X^n-1) over a finite field;

Unit-III

Cyclic Codes. BCH codes; Idempotents and Mattson-Solomon polynomials; Reed-Solomon codes, Justeen codes, MDS codes, Alterant, Goppa and generalized BCH codes; Spectral properties of cyclic codes. ;

Unit-IV

Decoding of BCH codes: Berlekamp's decoding algorithm, Massey's minimum shift register synthesis technique and its relation to Berlekamp's algorithm. A fast Berlekamp - Massey algorithm.

Unit-V

Convolution codes; Wozencraft's sequential decoding algorithm, Fann's algorithm and other sequential decoding algorithms; Viterbi decoding algorithm.

Text/Reference Books:

1. F.J. McWilliams and N.J.A. Slone, The theory of error correcting codes, 1977.
2. R.E. Balahut, Theory and practice of error control codes, Addison Wesley, 1983.

Course Outcomes:

At the end of the course, students will demonstrate the ability to:

1. Understand the error sources
2. **Understand error control coding applied in digital communication in real world era**
3. Understand the spectral properties of cyclic code
4. understand the decoding algorithms
5. Understand and analyze the convolution codes

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IV B.Tech I Sem: ECE **L T P C**

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(J7439) INTRODUCTION TO MEMS
(Professional Elective-V)

Unit-I
Introduction and Historical Background, Scaling Effects. Micro/Nano Sensors,

Unit-II
Actuators and Systems overview: Case studies. Review of Basic MEMS fabrication modules: Oxidation, Deposition Techniques, Lithography (LIGA), and Etching.

Unit-III
Micromachining: Surface Micromachining, sacrificial layer processes, Stiction; Bulk Micromachining, Isotropic Etching and Anisotropic Etching, Wafer Bonding.

Unit-IV
Mechanics of solids in MEMS/NEMS: Stresses, Strain, Hookes's law, Poisson effect, Linear Thermal Expansion, Bending; Energy methods,.

Unit-V
Overview of Finite Element Method, Modeling of Coupled Electromechanical Systems.

Text/Reference Book:
1. G. K. Ananthasuresh, K. J. Vinoy, S. Gopalkrishnan K. N. Bhat, V. K. Aatre, Micro and Smart Systems, Wiley India, 2012.
2. S. E.Lyshevski, Nano-and Micro-Electromechanical systems: Fundamentals of Nano-and Microengineering (Vol. 8). CRC press, (2005).
3. S. D. Senturia, Microsystem Design, Kluwer Academic Publishers, 2001.
4. M. Madou, Fundamentals of Microfabrication, CRC Press, 1997.
5. G. Kovacs, Micromachined Transducers Sourcebook, McGraw-Hill, Boston, 1998.
6. M.H. Bao, Micromechanical Transducers: Pressure sensors, accelerometers, and Gyroscopes, Elsevier, New York, 2000.

Course Outcomes:
At the end of the course the students will be able to
1. Appreciate the underlying working principles of MEMS and NEMS devices.
2. Design and model MEM devices for industrial applications which is also employable.
3. Understand the concept of Micromatching 4.Understands the MEMS/NEMS
5. Understand the Finite Element method.

IV B.Tech. I Sem: ECE **L T P C**

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(J7440) RF CIRCUIT DESIGN
(Professional Elective – V)

Course Objectives:

- To understand the Micro-wave communication system.
- To understand the advanced amplifier.
- To study the basics of RFID.
- To study the basics of Various Sensors.
- To study the various integrated circuits..

UNIT I

Review of basic RF/microwave theory and techniques

Micro-wave network parameters, basics of active devices, transmission line theory, passive and active RF components, RF transceiver infrastructure, wireless communications and standards.

UNIT II

ADVANCED HIGH EFFICIENCY POWER AMPLIFIER

Analysis of power, efficiency and linearity, transistor technologies of BJT, LDMOS, MESFET, HBT, SiC and MOSFET, modulation systems in wireless Comminication, and review of class-ABCDEFGH, Doherty, Chireix out phasing power amplifiers

UNIT III

RADIO FREQUENCY IDENTIFICATION(RFID)

RFID basic and standards, tags, readers, miniaturization, near field communication(NFC).

UNIT IV

WIRELESS NETWORK FOR SENSORS

Sensor basics and circuit, sensor technology for different application, and wireless connectivity.

UNIT V

RADIO FREQUENCY INTEGRATED CIRCUITS

Integrated circuit technology, key components in IC, basic RF circuits, and system on GaAs and CMOS, difference between hybrid circuits an integrated circuits, trends and challenges.

Text books:

1W A Davis and K K Agarwal: Radio Frequency Circuit Design, (John Wiley, New York, 2001)
2.Andrei Samuel Y. Liao, –Microwave Devices and Circuits‖, 3rd edition, Pearson education, 2011 reprint.

References :

1..Grebennikov: RF and microwave power amplifier design, (New York : McGraw-Hill, c2005)
2. Nemai Chandra Karmakar:Advanced RFID Systems,Security, and Application

Course Outcomes:

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

- Understand basic components of Micro-Wave Communication Systems.

- Understan basics of advanced amplifiers.
- Undestand basics of RFID Systems.
- Understand the Varous Optical Sources.
- Understand various integrated circuits.
- **To improve the employability**

IV B.Tech I Sem: ECE

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(J7441) MICROWAVE ENGINEERING & OPTICAL COMMUNICATION LAB

LIST OF EXPERIMENTS

MICROWAVE EXPERIMENTS

1. To study Microwave components.
2. Studyof the characteristics of the klystron tube.
3. Study of Characteristics of Gunn Diode.
4. Measurement of frequency of microwave source and demonstrate relationship among frequency, free space wavelength and guided wavelength.
5. Measurement of coupling factor and directivity of directional coupler.
6. Measurement of Scattering Parameter of three port circulator.

OPTICAL EXPERIMENTS

1. DC Characteristics of LED and PIN Photo diode.
2.Measurement of Numerical Aperture of fiber.
3.Losses measurement in optical fiber.
4.Eye pattern Measurement.
5..BER measurement.
6.Displacement Measurement.

Equipment Required:

1. Microwave Bench setup with Klystron Power Supply
2. Microwave Bench setup with Gunn Power Supply
3. Multimeter
4. VSWR meter
5. Microwave Components
6. Optical Fiber Trainer Kit

(J8443)CMOS DESIGN
(Professional Elective-VI)

IV Year II Sem: ECE **L T P C**
3 0 0 3

Unit-I:

Review of MOS transistor models, Non-ideal behavior of the MOS Transistor. Transistor as a switch.

Unit-II:

Inverter characteristics, Integrated Circuit Layout: Design Rules, Parasitics. Delay: RC Delay model, linear delay model.

Unit-III:

logical path efforts. Power, interconnect and Robustness in CMOS circuit layout.

Unit-IV:

Combinational Circuit Design: CMOS logic families including static, dynamic and dual rail logic.

Unit-V:

Sequential Circuit Design: Static circuits. Design of latches and Flip-flops.

Text/Reference Books:

1. N.H.E. Weste and D.M. Harris, CMOS VLSI design: A Circuits and Systems Perspective, 4thEdition, Pearson Education India, 2011.
2. C.Mead and L. Conway, Introduction to VLSI Systems, Addison Wesley, 1979.
3. J. Rabaey, Digital Integrated Circuits: A Design Perspective, Prentice Hall India, 1997.
4. P. Douglas, VHDL: programming by example, McGraw Hill, 2013.
5. L. Glaser and D.Dobberpuhl, The Design and Analysis of VLSI Circuits, Addison Wesley, 1985

Course Outcomes:

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

1. Design different CMOS circuits using various logic families along with their circuit layout.
2. **Use tools for VLSI IC design in real time applications**.
3. Know CMOS circuits design paths.
4. Design Combinational circuits using CMOS
5. Design Sequential circuits using CMOS

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(J8444)SCIENTIFIC COMPUTING
(Professional Elective -VI)

Unit-I
Introduction: Sources of Approximations, Data Error and Computational, Truncation Error and Rounding Error, Absolute Error and Relative Error, Sensitivity and Conditioning, Backward Error Analysis, Stability and Accuracy.

Unit-II
Computer Arithmetic: Floating Point Numbers, Normalization, Properties of Floating Point System, Rounding, Machine Precision, Subnormal and Gradual Underflow, Exceptional Values, Floating-Point Arithmetic, Cancellation System of liner equations: Linear Systems, Solving Linear Systems, Gaussian elimination, Pivoting, Gauss-Jordan, Norms and Condition Numbers, Symmetric Positive Definite Systems and Indefinite System, Iterative Methods for Linear Systems.

Unit-III
Linear least squares: Data Fitting, Linear Least Squares, Normal Equations Method, Orthogonalization Methods, QR factorization, Gram-Schmidt Orthogonalization, Rank Deficiency, and Column Pivoting Eigenvalues and singular values:Eigenvalues and Eigenvectors, Methods for Computing All Eigenvalues, Jacobi Method, Methods for Computing Selected Eigenvalues, Singular Values Decomposition, Application of SVD.

Unit-IV
Nonlinear equations: Fixed Point Iteration, Newton's Method, Inverse Interpolation Method Optimization: One-Dimensional Optimization, Multidimensional Unconstrained Optimization, Nonlinear Least Squares.

Unit-V
Interpolation: Purpose for Interpolation, Choice of Interpolating, Function, Polynomial Interpolation, Piecewise Polynomial Interpolation Numerical Integration And Differentiation: Quadrature Rule, Newton-Cotes Rule, Gaussian

Text/ Reference Books:

1. Heath Michael T., –Scientific Computing: An Introductory Survey‖ , McGraw-Hill, 2nd Ed., 2002
2. Press William H., Saul A. Teukolsky, Vetterling William T and Brian P. Flannery, –Numerical Recipes: The Art of Scientific Computing‖, Cambridge University Press, 3rd Ed., 2007
3. Xin-she Yang (Ed.)., –Introduction To Computational Mathematics‖, World Scientific Publishing Co., 2nd Ed., 2008
4. Kiryanov D. and Kiryanova E., –Computational Science‖, Infinity Science Press, 1st Ed., 2006
5. Quarteroni, Alfio, Saleri, Fausto, Gervasio and Paola, –Scientific Computing With MATLAB And Octave‖, Springer, 3rd Ed., 2010

Course Outcomes:
At the end of the course, students will demonstrate the ability to:
1. Understand the significance of computing methods, their strengths and application areas.
2. Perform the computations on various data using appropriate computation tools.
3. Understands about linear least equations
4. Understand and apply Non linear Equations for engineering problems
5. understand the concept of Interpolation

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(J 8445) RADAR SYSTEMS
(Professional Elective – VI)

Course Objective:

The objectives of the course are to:

6. Radar fundamentals and analysis of the radar signals.
7. To understand various technologies involved in the design of radar transmitters and receivers.
8. To learn various radars like MTI, Doppler and tracking radars and their comparison.
9. To learn different tracking techniques and tracking range of radars
10. To understand the different navigational systems using satellite and principle of operations.

UNIT I:

Basics of Radar:

Introduction, Maximum Unambiguous Range, Simple form of Radar Equation, Radar Block Diagram and Operation, Radar Frequencies and Applications. Prediction of Range Performance, Minimum Detectable Signal, Receiver Noise, Modified Radar Range Equation, Illustrative Problems.

Radar Equation: SNR, Envelope Detector- False Alarm Time and Probability, Integration of Radar Pulses, Radar Cross Section of Targets (Simple targets-sphere, cone-sphere), Transmitter Power, PRF and Range Ambiguities, System Losses (Qualitative treatment), Illustrative Problems.

UNIT II:

CW and Frequency Modulated Radar

Doppler Effect, CW Radar- Block Diagram, Isolation between Transmitter and Receivers, Non-zero IF Receiver, Receiver Bandwidth Requirements, Applications of CW radar. Illustrative Problems.

FM-CW Radar: Range and Doppler Measurement, Block Diagram and Characteristics, FM-CW altimeter, Multiple Frequency CW Radar.

UNIT III:

MTI and Pulse Doppler Radar:

Introduction, Principle, MTI Radar with- Power Amplifier Transmitter and Power Oscillator Transmitter, Delay Line Cancellers- Filter Characteristics, Blind Speeds, Double Cancellation, Staggered PRFs. Range Gated Doppler Filters. MTI Radar Parameters, Limitations to MTI Performance, MTI versus Pulse Doppler Radar.

UNIT-IV

Tracking Radar:

Different types of Tracking Techniques, Tracking in Range, Tracking in Doppler, Search Acquisition radar, Comparison of Trackers. Targets and Interference: Noise and false alarms, Detection of one sample with noise, Integration of pulse trains, Detection of fluctuating targets, CFAR.

UNIT-V

Introduction to Pulse Compression Radar:

Height finding radars, Air traffic control Radars and data handling, Atmospheric effects of radar, Electromagnetic compatibility aspects, Airborne Radars, Synthetic Aperture Radar, Secondary surveillance Radars

TEXTBOOKS:

1. Merrill I. Skolnik ,‖ Introduction to Radar Systems‖, 3rd Edition Tata Mc Graw-Hill 2003.

2. N.S.Nagaraja, –Elements of Electronic Navigation Systems‖, 2nd Edition, TMH, 2000.

REFERENCES:

1 Peyton Z. Peebles:, –Radar Principles‖, John Wiley, 2004 2. J.C Toomay,‖ Principles of Radar‖, 2nd Edition –PHI, 2004

Course Outcomes:

Upon completion of the course, students will be able to:

1. Understand the principle of radar system and derive the Range equation and the nature of detection
2. Understand various technologies involved in the design of radar transmitters and receivers.
3. To learn various radars like MTI, Doppler and tracking radars and their comparison.
4. Explain principles of navigation, in addition to approach and landing aids as related to navigation.
5. **Describe about the navigation systems using the satellite for various applications**.

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(J8446) MIXED SIGNAL DESIGN
(Professional Elective – VII)

Course Objectives:

1. To Study the basics of CMOS Digital circuits
2. To study the concepts of designing CMOS Analog circuits
3. To study the switched capacitor circuits
4. To design Data converters
5. To design phased lock loop circuits

UNIT-I

Combinational Logic Circuits: CMOS logic gates –NOR & NAND gates, Complex Logic circuits design –Realizing Boolean expressions using NMOS and CMOS gates , AOI and OIA gates, CMOS full adder, CMOS transmission gates.

Sequential Logic Circuits: Behavior of bistable elements, SR Latch, Clocked latch and flip flop circuits, CMOS D latch and edge triggered flip flop.

UNIT-II

CMOS Device Modeling: Simple MOS Large-Signal Model, Other Model Parameters, Small-Signal Model for the MOS Transistor, Computer Simulation Models, Sub-threshold MOS Model.

Analog CMOS Sub-Circuits: MOS Switch, MOS Diode/Active Resistor, Current Sinks and Sources, Current Mirrors, Current and Voltage References, Band gap Reference.

UNIT-III

Switched Capacitor Circuits: Introduction to Switched Capacitor circuits-basic building blocks, Operation and Analysis, Non-ideal effects in switched capacitor circuits, Switched capacitor integrators, first order filters, Switch sharing, biquad filters.

UNIT-IV

Nyquist Rate D/A Converters: Decoder based converters, Binary-Scaled converters, Thermometer-code converters, Hybrid converters

Nyquist Rate A/D Converters: Successive approximation converters, Pipelined A/D converters , Flash converters,Two-step A/D converters, Interpolating A/D converters, Folding A/D converters,Time-interleaved converters.

UNIT-V

Phased Lock Loop (PLL): Basic PLL topology, Dynamics of simple PLL, Charge pump PLLs-Lock acquisition, Phase/Frequency detector and charge pump, Basic charge pump PLL, Non-ideal effects in PLLs-PFD/CP non-idealities, Jitter in PLLs, Delay locked loops, applications

TEXT BOOKS:

1. CMOS Digital Integrated Circuits Analysis and Design – Sung-Mo Kang, Yusuf Leblebici,TMH, 3rd Ed., 2011.
2. CMOS Analog Circuit Design- Philip E. Allen and Douglas R. Holberg, Oxford University Press, International Second Edition/Indian Edition, 2010.

REFERENCE BOOKS:

1. Analog Integrated Circuit Design-David A. Johns,Ken Martin, Wiley Student Edition, 2013
2. CMOS Mixed-Signal Circuit Design - R. Jacob Baker, Wiley Interscience, 2009.
3. CMOS Integrated Analog-to-Digital and Digital-to-Analog converters-Rudy Van De Plassche, Kluwer Academic Publishers, 2003

Course out comes:

1. **To understand the designing of combinational and sequential logic circuits for industrial applications**
2. To understand the Analog CMOS modeling
3. To understand the basic building blocks of switched capacitor
4. To understand the designing of A/D and D/A converters
5. To understand PLL circuits

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(J8447)WIRELESS SENSOR NETWORKS
(Professional Elective -VII)

Course objectives:

This course will develop the knowledge in / on

1. Concept of sensor networks, challenges and architectures of sensor networks
2. Networking technologies and MAC protocols for wireless sensor networks
3. Different routing, transport layer and security protocols in WSN
4. Infrastructure establishment and security issues in WSN
5. Sensor network platforms tools and applications of WSN's

UNIT I

OVERVIEW OF WIRELESS SENSOR NETWORKS:

Key definitions of sensor networks, Advantages of sensor Networks, Unique constraints an challenges, Driving Applications, Enabling Technologies for Wireless Sensor Networks.

ARCHITECTURES:

Single-Node Architecture -Hardware Components, Energy Consumption of Sensor Nodes, Operating Systems and Execution Environments, Network Architecture -Sensor Network Scenarios, Optimization Goals and Figures of Merit, Gateway Concepts.

UNIT II

NETWORKING Technologies: Physical Layer and Transceiver Design Considerations, Personal area networks (PANs), hidden and exposed node problem, Topologies of PANs, MANETs, WANETs.

MAC Protocols for Wireless Sensor Networks:

Issues in Designing a MAC protocol for Ad Hoc Wireless Networks, Design goals of a MAC Protocol for Ad Hoc Wireless Networks, Classifications of MAC Protocols, Contention -Based Protocols, and with reservation Mechanisms, Contention –Based MAC Protocols with Scheduling Mechanisms, MAC Protocols that use Directional Antennas, Other MAC Protocols.

UNIT-III

ROUTING PROTOCOLS:

Introduction, Issues in Designing a Routing Protocol for Ad Hoc Wireless Networks, Classification of Routing Protocols, Table –Driven Routing Protocols, On –Demand Routing Protocols, Hybrid Routing Protocols, Routing Protocols with Efficient Flooding Mechanisms, Hierarchical Routing Protocols, Power –Aware Routing Protocols, Proactive Routing

TRANSPORT LAYER AND SECURITY PROTOCOLS:

Introduction, Issues in Designing a Transport Layer Protocol for Ad Hoc Wireless Networks, Design Goals of a Transport Layer Protocol for Ad Hoc Wireless Networks, Classification of Transport Layer Solutions, TCP Over Ad Hoc Wireless Networks, Other Transport Layer Protocol for Ad Hoc Wireless Networks.

UNIT IV

INFRASTRUCTURE ESTABLISHMENT:

Topology Control, Clustering, Time Synchronization, Localization and Positioning, Sensor Tasking and Control.

SECURITY IN WSNs: Security in Ad Hoc Wireless Networks, Network Security Requirements, Issues and Challenges in Security Provisioning, Network Security Attacks, Key Management, Secure Routing in Ad Hoc Wireless Networks.

UNIT-V

SENSOR NETWORK PLATFORMS AND TOOLS:
Sensor Node Hardware –Berkeley Motes, Programming Challenges, Node-level software platforms, Node-level Simulators, State-centric programming.
APPLICATIONS of WSN: Ultra wide band radio communication, Wireless fidelity systems. Future directions, Home automation, smart metering Applications

TEXT BOOKS:

1. Ad Hoc Wireless Networks: Architectures and Protocols -C. Siva Ram Murthy and B.S.Manoj, 2004, PHI
2.Wireless Ad-hoc and Sensor Networks: Protocols, Performance and Control – Jagannathan Sarangapani, CRCPress
3.Holger Karl & Andreas Willig,–Protocols And Architectures for Wireless Sensor Networks", John Wiley, 2005.

REFERENCES:

1. Kazem Sohraby, Daniel Minoli, & Taieb Znati, –WirelessSensorNetworksTechnology, Protocols, and Applications‖, John Wiley, 2007.
2. Feng Zhao & Leonidas J. Guibas, –Wireless Sensor Networks-An Information Processing Approach", Elsevier, 2007.
3. Ad-Hoc Mobile Wireless Networks: Protocols & Systems, C.K. Toh ,1 ed. Pearson Education.
4. Wireless Sensor Networks -C.S. Raghavendra, Krishna M. Sivalingam, 2004,Springer
5. Wireless Sensor Networks -S Anandamurugan , Lakshmi Publication

Course outcomes:

Upon completion of the subject student will be able to

1. Understand the Concept of sensor networks, challenges and architectures of sensor networks
2. Analyze the Networking technologies and MAC protocols for wireless sensor networks
3. Understand the the different routing, transport layer and security protocols in WSN
4. **Analyze the Infrastructure establishment and to solve the security issues in WSN**
5. Understand the Sensor network platforms tools and applications of WSN‘s

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

B.Tech IV Year. II Sem.ECE **L T P C**
3 0 0 3

(J8448) SATELLITE COMMUNICATIONS
(Professional Elective-VII)

COURSE OBJECTIVES:

1. To understand the basics of satellite communication principles.
2. To understand the satellite segment and earth segment.
3. To analyze the various methods of satellite access.
4. To understand the applications of satellites**.**
5. To understand the satellite navigation and global positioning system**.**

UNIT- I :

COMMUNICATION SATELLITE: History of satellite communication, satellite systems**,** Kepler‟s Laws, Newton‟s law, orbital period, orbital parameters, orbital perturbations, effects of orbital inclination, Azimuth and Elevation, station keeping, geo stationary and non Geo-stationary orbits – Look Angle Determination–eclipse-Sub satellite point –Sun transit outage-Launching Procedures – launch vehicles and propulsion, applications.

UNIT-II

SPACE SEGMENT AND SATELLITE LINK : Spacecraft Technology- Structure, Primary power, Attitude and Orbit control, Thermal control and Propulsion, communication subsystems, Telemetry, Tracking and command. Satellite uplink and downlink Analysis and Design, link budget, - Propagation Characteristics and Frequency considerations- System reliability and design lifetime.

UNIT - III

EARTH SEGMENT : Introduction ,Receive ,Only home TV systems ,Outdoor unit – Indoor unit for analog (FM) TV ,Master antenna TV system ,Community antenna TV system , Transmit ,Receive earth stations ,Power test methods, Free-space transmission, Link power budget equation – System noise ,Antenna noise, Effects of rain ,Uplink rain,Fade margin ,Downlink rain ,Fade margin ,Combined uplink and downlink C/N ratio

Satellite Navigation and Global Positioning Systems: Radio and Satellite Navigation, GPS Position Location Principles, GPS Receivers, GPS C/A Code Accuracy, Differential GPS.

UNIT -IV

SATELLITE ACCESS : Modulation and Multiplexing: Voice, Data, Video, Analog – digital transmission system, Digital video Brocast, multiple access: FDMA, TDMA,DAMA, CDMA, Assignment Methods, Spread Spectrum transmission and reception .**Propagation effects**: Atmospheric Absorption, Tropospheric and Ionospheric scintillation and low angle fading, Rain induced attenuation, rain induced cross polarization interference.

UNIT -V

SATELLITE APPLICATIONS :INTELSAT Series, INSAT, VSAT, Mobile satellite services: GSM, GPS, INMARSAT, LEO, MEO, Satellite Navigational System. Direct Broadcast satellites (DBS)- Direct to home Broadcast (DTH), Digital audio broadcast (DAB)- Worldspace services, Business TV(BTV), GRAMSAT, Specialized services – E –mail, Video conferencing, Internet.

Text books:

1. Satellite communications-Timothy Pratt, Charles Bostian ,JeremyAllnutt,2nd Edition,2003, John Wiley & Sons.

2. Satellite communication-Dennis Roddy Mc-Grawhill International,4th Edition 2006.

Reference books:

1. Wilbur L. Pritchard, Hendri G. Suyderhoud, Robert A. Nelson, ‗Satellite Communication Systems Engineering', Prentice Hall/Pearson, 2007

2. Satellite communications:Design principles-M.Richcharia,2nd Ed.,BSP,2003.

OUTCOMES: Learners will be able to:

1. Analyze the satellite orbits.
2. Analyze the earth segment and space segment.
3. To understand the satellite access methods.
4. To understand the earth station technology.
5. **To Design various satellites in real time applications**.

COURSE STRUCTURE
AND
DETAILED SYLLABUS

COLLEGE CODE: C4

ELECTRICAL & ELECRONICS ENGINEERING

B.TECH. FOUR YEAR DEGREECOURSE
(Applicable for the batches admitted from2018-2019)

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

Narasampet, Warangal – 506 332
Telangana State, India

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

ELECTRICAL & ELECTRONICS ENGINEERING
COURSE STRUCTURE
(Applicable from the batch admitted from 2018-19 onwards)

IYEAR **I SEMESTER**

S.No	Subject Code	Subject	Marks		Hours /Week			Credits
			Internal	External	L	T	P	
1.	J1001	Mathematics- I	30	70	3	1	0	4
2.	J1011	English	30	70	2	0	0	2
3.	J1501	Programming for Problem Solving	30	70	3	1	0	4
4.	J1201	Basic Electrical Engineering	30	70	3	1	0	4
5.	J1302	Engineering Graphics	30	70	1	0	4	3
6.	J1012	English Language and Communication Skills Lab	30	70	0	0	2	1
7.	J1502	Programming for Problem Solving Lab	30	70	0	0	3	1.5
		Total			**12**	**3**	**9**	**19.5**

I YEAR **IISEMESTER**

S.No	Subject Code	Subject	Marks		Hours /Week			Credits
			Internal	External	L	T	P	
1.	J2002	Mathematics – II	30	70	3	1	0	4
2.	J2007	Engineering Physics	30	70	3	1	0	4
3.	J2008	Engineering Chemistry	30	70	3	1	0	4
4.	J2503	Object Oriented Programming	30	70	3	0	0	3
5.	J2504	Object Oriented Programming Lab	30	70	0	0	3	1.5
6.	J2009	Engineering Physics and Chemistry Lab	30	70	0	0	3	1.5
7.	J2304	Engineering Workshop & IT Work Shop	30	70	1	0	3	2.5
		Total			**13**	**3**	**9**	**20.5**

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

ELECTRICAL & ELECTRONICS ENGINEERING
COURSE STRUCTURE
(Applicable from the batch admitted from 2018-19 onwards)

II YEAR **ISEMESTER**

S.No.	Code	Subject	Marks		Hours /Week			Credits
			Internal	External	L	T	P	
1.	J3003	Transformation and Complex Variables	30	70	3	1	0	4
2.	J3205	Electromagnetic Fields	30	70	2	1	0	3
3.	J3206	Electrical circuits-I	30	70	2	1	0	3
4.	J3210	DC Machines & Transformers	30	70	2	1	0	3
5.	J3401	Electronics Devices and Circuits	30	70	3	0	0	3
6.	J3404	Electronics Devices and Circuits Lab	30	70	0	0	3	1.5
7.	J3207	Electrical Circuits Lab	30	70	0	0	3	1.5
8.	J3211	Electrical Machines-I Lab	30	70	0	0	3	1.5
		Total			**12**	**4**	**9**	**20.5**
9	JMC01	Environmental Science	30	70	3	0	0	0

II YEAR **IISEMESTER**

S.No.	Code	Subject	Marks		Hours /Week			Credits
			Internal	External	L	T	P	
1.	J4212	Electrical circuits-II	30	70	2	1	0	3
2.	J4213	ACMachines	30	70	2	1	0	3
3.	J4215	Power systems-I	30	70	2	1	0	3
4.	J4414	IC Applications	30	70	3	0	0	3
5.	J4216	Electrical Measurements & Instrumentation	30	70	2	1	0	3
6.	J4214	Electrical Machines-II Lab	30	70	0	0	3	1.5
7.	J4420	IC Applications Lab	30	70	0	0	3	1.5
8.	J4217	Electrical Measurements &InstrumentationLab	30	70	0	0	3	1.5
		Total			**11**	**4**	**9**	**19.5**
9	JMC02	Gender Sensitization	100	--	2	0	0	0

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
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ELECTRICAL & ELECTRONICS ENGINEERING
COURSE STRUCTURE
(Applicable from the batch admitted from 2018-19 onwards)

III YEAR ISEMESTER

S.No.	Code	Subject	Marks		Hours /Week			Credits
			Internal	External	L	T	P	
1.	J5218	Power system-II	30	70	2	1	0	3
2.	J5219	Control Systems	30	70	2	1	0	3
3.	J5221	Power Electronics	30	70	2	1	0	3
4.		**Open Elective-I**	30	70	3	0	0	3
5.		**ProfessionalElective-I**	30	70	3	0	0	3
6.	J5222	Power Electronics Lab	30	70	0	0	3	1.5
7.	J5220	Control Systems Lab	30	70	0	0	3	1.5
		Total			**12**	**3**	**6**	**18**
8.	JMC03	Constitution of India	30	70	3	0	0	0

III YEAR IISEMESTER

S.No.	Code	Subject	Marks		Hours /Week			Credits
			Internal	External	L	T	P	
1.	J6226	Static Drives	30	70	2	1	0	3
2.	J6227	Switch Gear and Protection	30	70	2	1	0	3
3.	J6228	Computer Methods in Power Systems	30	70	2	1	0	3
4.	J6424	Microprocessors& Microcontrollers	30	70	2	1	0	3
5.		**Open Elective-II**	30	70	3	0	0	3
6.		**ProfessionalElective-II**	30	70	3	0	0	3
7.	J6229	Simulation of Electrical Systems Lab	30	70	0	0	3	1.5
8.	J6430	Microprocessors& Microcontrollers Lab	30	70	0	0	3	1.5
9.	J6280	Summer Internship	100	--	0	0	2	1
		Total			**14**	**4**	**8**	**22**

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
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ELECTRICAL & ELECTRONICS ENGINEERING
COURSE STRUCTURE
(Applicable from the batch admitted from 2018-19 onwards)

IV YEAR **ISEMESTER**

S.No.	Code	Subject	Marks		Hours /Week			Credits
			Internal	External	L	T	P	
1.	J7233	Power System Operation & Control	30	70	2	1	0	3
2.	J7235	Utilization of Electrical Energy	30	70	2	1	0	3
3.		**Open Elective-III**	30	70	3	0	0	3
4.		**ProfessionalElective-III**	30	70	3	0	0	3
5.		**ProfessionalElective-IV**	30	70	3	0	0	3
6.	J7234	Power Systems Simulation lab	30	70	0	0	3	1.5
7.	J7281	Mini Project	100	--	0	0	5	2.5
		Total			**13**	**2**	**8**	**19**

IVYEAR **II SEMESTER**

S.No.	Code	Subject	Marks		Hours /Week			Credits
			Internal	External	L	T	P	
1.	J8242	Fundamentals of HVDC & FACTS	30	70	3	0	0	3
2.		**ProfessionalElective-V**	30	70	3	0	0	3
3.		**Professional Elective –VI**	30	70	3	0	0	3
4.	J8282	Technical Seminar	100	--	0	1	0	1
5.	J8283	Comprehensive Viva-Voce	100	--	0	2	0	2
6.	J8284	Major Project	30	70	0	0	18	9
		Total			**9**	**3**	**18**	**21**
7	J8285	*NSS			0	0	0	2

* Refer Academic Regulation, Item no.01 sub section (ii)

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(AUTONOMOUS)

ELECTRICAL & ELECTRONICS ENGINEERING

LIST OF PROFESSIONAL ELECTIVES

Professional Elective-I:

S.No.	Subject Name	Subject Code	Preferred Semester
1.	Renewable Energy Sources	J5223	V
2.	Energy Storage Systems	J5224	V
3.	Special Electrical Machines	J5225	V

Professional Elective-II:

S.No.	Subject Name	Subject Code	Preferred Semester
1.	Electrical Distribution Systems	J6230	VI
2.	Electrical Estimation and Costing	J6231	VI
3.	Power Quality	J6232	VI

ProfessionalElective-III:

S.No.	Subject Name	Subject Code	Preferred Semester
1.	High Voltage Engineering	J7236	VII
2.	Advanced Power System Protection	J7237	VII
3.	Industrial Electrical Systems	J7238	VII

ProfessionalElective-IV:

S.No.	Subject Name	Subject Code	Preferred Semester
1.	Advanced Control Systems	J7239	VII
2.	Power system Dynamics	J7240	VII
3.	Linear system Analysis	J7241	VII

Professional Elective-V:

S.No.	Subject Name	Subject Code	Preferred Semester
1.	Smart Grid	J8243	VIII
2.	Modern Power Electronic Converters	J8244	VIII
3.	Power System Reliability	J8245	VIII

Professional Elective-VI:

S.No.	Subject Name	Subject Code	Preferred Semester
1.	Soft Computing Techniques	J8246	VIII
2.	Digital Control systems	J8247	VIII
3.	Extra high Voltage AC Transmission	J8248	VIII

B.TECH

I YEAR
I & II SEMESTER
SYLLABUS

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(UGC-AUTONOMOUS)

(J1001) MATHEMATICS - I

B.Tech I-Year I-Semester: Common toallbranches	**L**	**T**	**P**
	C3	**1**	**0**
			4

Pre-requisites: Mathematical Knowledge at pre-university level

Objectives: The Students able to learn

1. Types of matrices and theirproperties.
2. Concept of a rank of the matrix and applying this concept to know the consistency and solving the system of linearequations.
3. Concept of Eigen values and eigenvectors and to reduce the quadratic form to canonicalform
4. Concept ofSequence.
5. Concept of nature of theseries.
6. Geometrical approach to the mean value theorems and their application to the mathematicalproblems
7. Evaluation of surface areas and volumes of revolutions ofcurves.
8. Evaluation of improper integrals using Beta and Gammafunctions.
9. Partial differentiation, concept of total derivative Finding maxima and minimaof function of two and threevariables.

UNIT-I

Matrices: Matrices: Types of Matrices, Symmetric; Hermitian; Skew-symmetric; Skew-Hermitian; orthogonal matrices; Unitary Matrices; rank of a matrix by Echelon form and Normal form, Inverse of Non-singular matrices by Gauss-Jordan method; System of linear equations; solving system of Homogeneous and Non-Homogeneous equations. Gauss-elimination method; Gauss Seidel Iteration Method.

UNIT-II

Eigen values and Eigen vectors: Linear Transformation and Orthogonal Transformation: Eigen values and Eigenvectors and their properties: Diagonalization of a matrix; Cayley-Hamilton Theorem (without proof); finding inverse and power of a matrix by Cayley-Hamilton Theorem; Quadratic forms and Nature of the Quadratic Forms; Reduction of Quadratic form to canonical forms by Orthogonal Transformation.

UNIT-III

Sequence: Definition of a Sequence, limit; Convergent, Divergent and Oscillatory sequences.

Series: Convergent, Divergent and Oscillatory Series; Series of positive terms; Comparison test, p-test, D-Alembert's ratio test; Raabe's test; Cauchy's Integral test; Cauchy's root test; logarithmic test. Alternating series: Leibnitz test; Alternating Convergent series: Absolute and ConditionallyConvergence.

UNIT-IV

Calculus: Mean value theorems: Rolle's theorem, Lagrange's Mean value theorem with their Geometrical Interpretation and applications, Cauchy's Mean value Theorem. Taylor's Series. Applications of definite integrals to evaluate surface areas and volumes of revolutions of curves (Only in Cartesian coordinates), Definition of Improper Integral: Beta and Gamma functions and their applications.

UNIT-V

Multivariable calculus (Partial Differentiation and applications): Definitions of Limit and continuity.

Partial Differentiation; Euler's Theorem; Total derivative; Jacobian; Functional dependence &independence, Maxima and minima of functions of two variables and three variables using method of Lagrange multipliers.

Text books:

1. B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36thEdition,2010
2. Erwin kreyszig, Advanced Engineering Mathematics, 9thEdition, John Wiley &Sons,2006.
3. G.B. Thomas and R.L. Finney, Calculus and Analytic geometry, 9thEdition,Pearson, Reprint, 2002.

References:

1. N.P. Bali and Manish Goyal, A text book of Engineering Mathematics, LaxmiPublications, Reprint,2008.
2. Ramana B.V., Higher Engineering Mathematics, Tata McGraw Hill New Delhi,11thReprint,2010.

***Outcomes*: After learning the contents of this paper the student must be able to

1. Write the matrix representation of a set of linear equations and to analyse the solution of the system ofequations
2. Find the Eigenvalues and Eigenvectors
3. Reduce the quadratic form to canonical form using orthogonal transformations.
4. Analyse the nature of sequence andseries.
5. Solve the applications on the mean valuetheorems.
6. Evaluate the improper integrals using Beta and Gammafunctions
7. Find the extreme values of functions of two variables with/ without constraints.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J1011) ENGLISH

B.TechI-YearI-Semester:EEE

L	T	P	C
2	0	0	2

Introduction:
In view of the growing importance of English as a tool for global communication and the consequent emphasis on training students to acquire language skills, the syllabus of English has been designed to develop linguistic, communicative and critical thinking competencies of Engineering students.

In English classes, the focus should be on the skills development in the areas of vocabulary, grammar, reading and writing. For this, the teachers should use the prescribed text for detailed study. The students should be encouraged to read the texts leading to reading comprehension and different passages may be given for practice in the class. The time should be utilized for working out the exercises given after each excerpt, and also for supplementing the exercises with authentic materials of a similar kind, for example, newspaper articles, advertisements, promotional material etc. *The focus in this syllabus is on skill development, fostering ideas and practice of language skills in various contexts andcultures.*

Learning Objectives: The course will help to
1. Improve the language proficiency of students in English with an emphasis on Vocabulary, Grammar, Reading and Writing skills.
2. Equip students to study academic subjects more effectively and critically usingthe theoretical and practical components of English syllabus.
3. Develop study skills and communication skills in formal and informalsituations.

Course Outcomes: Students should be able to
- Use English Language effectively in spoken and writtenforms.
- Comprehend the given texts and respondappropriately.
- Communicate confidently in various contexts and differentcultures.
- Acquire basic proficiency in English including reading and listening comprehension, writing and speakingskills.

SYLLABUS
UNIT –I
'The Raman Effect' from the prescribed textbook 'English for Engineers' published by Cambridge University Press.
Vocabulary Building: The Concept of Word Formation --The Use of Prefixes and Suffixes.
Grammar: Identifying Common Errors in Writing with Reference to Articles and Prepositions.
Reading: Reading and Its Importance- Techniques for Effective Reading.

Basic Writing Skills: Sentence Structures - Use of Phrases and Clauses in Sentences- Importance of Proper Punctuation- Techniques for writing precisely – **Paragraph writing** – Types, Structures and Features of a Paragraph - Creating Coherence-Organizing Principles of Paragraphs in Documents.

UNIT –II

'Ancient Architecture in India' from the prescribed textbook 'English for Engineers' published by Cambridge University Press.

Vocabulary: Synonyms and Antonyms.

Grammar: Identifying Common Errors in Writing with Reference to Noun-pronoun Agreement and Subject-verb Agreement.

Reading: Improving Comprehension Skills – Techniques for Good Comprehension

Writing: Format of a Formal Letter-**Writing Formal Letters** E.g.., Letter of Complaint, Letter of Requisition, Job Application with Resume.

UNIT –III

'Blue Jeans' from the prescribed textbook 'English for Engineers' published by Cambridge University Press.

Vocabulary: Acquaintance with Prefixes and Suffixes from Foreign Languages in English to form Derivatives-Words from Foreign Languages and their Use in English.

Grammar: Identifying Common Errors in Writing with Reference to Misplaced Modifiers and Tenses.

Reading: Sub-skills of Reading- Skimming and Scanning

Writing: Nature and Style of Sensible Writing- **Defining- Describing** Objects, Places and Events – **Classifying**- Providing Examples or Evidence

UNIT –IV

'What Should You Be Eating' from the prescribed textbook 'English for Engineers' published by Cambridge University Press.

Vocabulary: Standard Abbreviations in English

Grammar: Redundancies and Clichés in Oral and Written Communication.

Reading: Comprehension**-** Intensive Reading and Extensive Reading

Writing: Writing Practices--Writing Introduction and Conclusion - Essay Writing-Précis Writing.

UNIT –V

'How a Chinese Billionaire Built Her Fortune' from the prescribed textbook 'English for Engineers' published by Cambridge University Press. Vocabulary: Technical Vocabulary and their usage

Grammar: Common Errors inEnglish

Reading: Reading Comprehension-Exercises forPractice

Writing: **Technical Reports**- Introduction – Characteristics of a Report – Categories of Report Formats- Structure of Reports (Manuscript Format) -Types of Reports - Writing a Report.

Prescribed Textbook:

1. **Sudarshana, N.P. and Savitha, C. (2018). English for Engineers. Cambridge University Press.**

References:

1. Swan, M. (2016). Practical English Usage. Oxford UniversityPress.
2. Kumar, S and Lata, P.(2018). Communication Skills. Oxford UniversityPress.
3. Wood, F.T. (2007).Remedial English Grammar. Macmillan.
4. Zinsser, William. (2001). On Writing Well. Harper ResourceBook.
5. Hamp-Lyons, L. (2006).Study Writing. Cambridge UniversityPress.
6. Exercises in Spoken English. Parts I –III. CIEFL, Hyderabad. Oxford UniversityPress.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J1501) Programming for Problem Solving

B.TechI-YearI-Semester:EEE

	L	T	P
C3	1	0	
		4	

Course Objectives:

1. To introduces the basics of computers and informationtechnology.
2. To educate problem solvingtechniques.
3. To impart programming skills in Clanguage.
4. To practice structured programming to solve real lifeproblems.
5. To study the concepts of Assembler, Macro Processor, Loader andLinker

UNIT-I

History and Classifications of Computers – Components of a Computer – Working Principle of Computer – Hardware – Software and its Types – Applications of Computers –Network and its Types – Internet and its services – Intranet– Extranet – Generations of Programming Languages Introduction to Number System.

UNIT-II

Problem solving techniques – Program development life-cycle – Algorithm – Complexities of Algorithm – Flowchart – Pseudo code. Introduction to C –C Program Structure – C tokens: Keyword, Identifiers, Constants, Variable, Data types (simple and user-defined) – Operators and its types – Operator Precedence – Expression Evaluation – Type Conversion – Input/outputoperations.

UNIT-III

Branching Statements – Looping Statements – Arrays – Multidimensional arrays. Functions: Function Prototype, Passing Arguments to Function – Call by Value and Call by Reference – Nested function call – Library Functions – User-defined Functions – Recursion. Strings – String I/O functions, String Library functions – Storage classes

UNIT-IV

Structures – Arrays and Structures – Nested structures – Structure as Argument to functions– Union Pointers – Declaration, Initialization and Accessing Pointer variable – Pointers and arrays – pointers as argument and return value – Pointers and strings - pointers and structures.

UNIT-V

Introduction to File Concepts in C – File types – I/O operations on files – File modes – Random access to files – Command line arguments. Dynamic Memory Allocation: MALLOC, CALLOC, FREE, REALLOC Introduction to preprocessor – Macro substitution directives – File inclusion directives – Compiler Control directives – Miscellaneousdirectives.

Text Books:

1. J. B. Dixit, “Computer Fundamentals and Programming in C”, Firewall Media,2009.
2. Balagurusamy. E, “Programming in ANSI C”, Tata McGraw Hill, Sixth edition,2012.

Reference Books:

1. Ashok N Kamthane, “Computer Programming”, Pearson education, Second Impression,2008.
2. Venugopal.KandKavichithra.C,“ComputerProgramming”,NewAgeInternationalPublishers,FirstEdition, 2007.
3. Byron S Gottfried, “Programming with C”, Schaum’s Outlines, Second Edition, Tata McGraw-Hill,2006.

4. Dromey R.G., “How to Solve it by Computer”, Pearson Education, Fourth Reprint,2007.
5. Kernighan,B.W and Ritchie,D.M, “The C Programming language”, Second Edition,Pearson Education,2006.

Course Outcomes:

1. Know the fundamentals ofcomputers
2. Uunderstand applying logical skills for problemsolving
3. Learn C programming languageconcepts
4. Apply C programming language concepts for problemsolving
5. Gain knowledge in using memory management techniques in programming skills

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J1201) BASIC ELECTRICAL ENGINEERING

B.Tech I Year I-Semester: EEE

L	T	P	C
3	1	0	4

Course Objectives:

1. To introduce the concepts of Electrical circuits and itscomponents.
2. To understand magnetic circuits, DC circuits and AC single phase & three phasecircuits
3. To study and understand the different types of DC/AC machines andTransformers.
4. To import the knowledge of various electricalinstallations.
5. To understand the working of different types of powerplants

UNIT –I DC Circuits

Electrical circuit elements (R, L and C) ,Definition of Voltage, Current, Power & Energy, Ohm's law, Voltage and Current sources,KVL & KCL- Division of current in Series & parallel circuits - analysis of simple circuits with DC excitation. Definition of Superposition, Thevenin's and Norton's Theorems, Time-domain analysis of first-order RL and RC circuits–Simple Problems.

UNIT –II AC Circuits

Representation of sinusoidal waveforms, Peak and RMS values, phasor representation, real power, reactive power, apparent power, power factor. Analysis of single-phase AC circuits consisting of R, L, C, RL, RC, RLC combinations (series and parallel) -resonance.
Three phase balanced circuits, voltage and current relations in star and delta connections-Power measurement by two wattmeter method.

UNIT –III Electrical Machines

Law of Electromagnetic induction, Fleming's Right & Left hand rule - Generation of rotating magnetic fields, Principle of DC rotating machine, Types of DC machines, three-phase induction motor, Significance of torque-slip characteristic, single phase transformer, Auto transformer, single phase induction motor and synchronous motor, synchronous generators (Qualitative approach only)

UNIT –IV Electrical Installations

Components of LT Switchgear: Switch Fuse Unit (SFU), MCB, ELCB, MCCB, Types of Wires and Cables, Earthing. Types of Batteries, Important Characteristics for Batteries. Elementary calculations for energy consumption, power factor improvement and battery backup.

UNIT –V Power Plants

Layout of Thermal, Hydro and Nuclear power generation (block diagram approach only).Components of AC transmission and distribution systems –One linediagram.

Text-Books:

1. Basic Electrical Engineering - D.P. Kothari and I.J. Nagrath, 3rd edition 2010, Tata McGrawHill.
2. D.C. Kulshreshtha, "Basic Electrical Engineering", McGraw Hill,2009.
3. Electrical Machines – byP.S.Bimbra
4. Generation, Distribution and Utilization of electrical energy by C.L.Wadhwa, Newage InternationalPublishers.

Reference-Books:

1. Engineering circuit analysis- by William Hayt and Jack E. Kemmerly, Mc Graw Hill Company, 6th edition.
2. L. S. Bobrow, "Fundamentals of Electrical Engineering", Oxford UniversityPress,2011.
3. E. Hughes, "Electrical and Electronics Technology", Pearson,2010.
4. V. D. Toro, "Electrical Engineering Fundamentals", Prentice Hall India,1989.

Course Outcomes: After going through this course the student gets Knowledge on

1. Electrical circuits using network laws andtheorems.
2. Analyze basic Electric and Magneticcircuits
3. Principles of ElectricalMachines
4. Low Voltage ElectricalInstallations
5. Working of different types of powerplants And increase employability

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)
(J1302) ENGINEERING GRAPHICS

B.TECH. I YEAR – I SEM: CSE & EEE	L	T	P	C
	1	0	4	3

Pre-requisites: Nil

Course objectives:

1. To Use various engineering drawing instruments along with learn the basics of drawings, dimensioning, scales and conic sections like ellipse, parabola andhyperbola.
2. To Learn projections of points, lines and plane viewed in differentpositions.
3. To Learn projections of solids and sections of solids in differentpositions.
4. To impart knowledge of development of surfaces and intersections is most useful of real time applications inindustry.
5. Attain the concept of isometric, orthographicprojections.

UNIT – I

Introduction to Engineering Drawing: Principles of Engineering Graphics and their Significance, Conic Sections including the Rectangular Hyperbola – General method only. Cycloid, Epicycloid and Hypocycloid, Scales – Plain & Diagonal.

UNIT- II

Orthographic Projections: Principles of Orthographic Projections – Conventions – Projections of Points and Lines, Projections of Plane regular geometric figures.—Auxiliary Planes.

UNIT – III

Projections of Regular Solids – Auxiliary Views - Sections or Sectional views of Right Regular Solids – Prism, Cylinder, Pyramid, Cone – Auxiliary views – Sections of Sphere

UNIT – IV

Development of Surfaces of Right Regular Solids – Prism, Cylinder, Pyramid and Cone, Intersection of Solids: Intersection of – Prism vs Prism- Cylinder Vs Cylinder

UNIT – V

Isometric Projections: Principles of Isometric Projection – Isometric Scale – Isometric Views – Conventions – Isometric Views of Lines, Plane Figures, Simple and Compound Solids – Isometric Projection of objects having non- isometric lines. Isometric Projection of Spherical Parts. Conversion of Isometric Views to Orthographic Views and Vice-versa –Conventions
Introduction to CAD: (For Internal Evaluation Weightage only): Introduction to CAD Software Package Commands.- Free Hand Sketches of 2D- Creation of 2D Sketches by CAD Package

TEXTBOOKS:

1. Engineering Drawing N.D. Bhatt /Charotar
2. Engineering Drawing / N. S. Parthasarathy and Vela Murali/Oxford

REFERENCE BOOKS:

1. Engineering Drawing / Basant Agrawal and McAgrawal/ McGrawHill
2. Engineering Drawing/ M. B. Shah, B.C. Rane /Pearson.
3. Computer Aided Engineering Drawing – K Balaveera Reddy et al – CBSPublishers

Course Outcomes:

1. Select, construct and interpret appropriate drawing scales as per the situation and able to draw simplecurves.
2. Graduates are able to draw orthographic projections of points ,lines andplanes.
3. Able to draw the orthographic projections of solids and sections ofsolids.
4. Layout development of solids for practical situations along with able to draw sections of solids.
5. Comprehend the isometricprojections.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J1012) English Language and Communication Skills Lab

B.Tech I Year I-Semester: EEE

L	T	P	C
0	0	2	1

The **Language Lab** focuses on the production and practice of sounds of language. It familiarizes the students with the use of English in everyday situations both in formal and informal contexts.

Course Objectives:

1. To facilitate computer-assisted multi-media instruction enablingindividualized and independent languagelearning
2. To sensitize the students to the nuances of English speech sounds, word accent, intonation andrhythm
3. To bring about a consistent accent and intelligibility in students' pronunciationof English by providing an opportunity for practice inspeaking
4. To improve the fluency of students in spoken English and neutralize theirmother tongueinfluence
5. To train students to use language appropriately for public speaking, group discussions andinterviews

Syllabus:

The language Lab shall have two parts:

Computer Assisted Language Learning (CALL) Lab

Interactive Communication Skills (ICS)Lab

<u>Listening Skills:</u>

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 theirpronunciation
- To equip students with necessary training in listening, so that they can comprehend the speech of people of different backgrounds andregions**.**
- Students should be given practice in listening to the sounds of the language to be able to recognize them, to distinguish between them to mark stress and recognize and use the right intonation insentences.
- Listening for generalcontent
- Listening to fill upinformation
- Intensivelistening
- Listening for specificinformation

Speaking Skills:

Objectives:

- To make students aware of the role of speaking in English and its contribution to their success.
- To enable students to express themselves fluently and appropriately in social and professionalcontexts.
- Oralpractice
- Describingobjects/situations/people
- Role play
- 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 inferencesetc.
- Skimming and Scanning thetext
- Understanding the gist of anargument
- Identifying the topicsentence
- Inferring lexical and contextual meaning
- Understanding discourse features

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 formalskill
- To equip them with the components of different forms of writing, beginning with the lower order ones. Writingsentences
- Use of appropriatevocabulary
- Paragraphwriting
- Coherence andcohesiveness
- Narration /description
- NoteMaking
- Formal and informal letterwriting

The following course content is prescribed for the Lab.

Exercise – I
CALL Lab:
Understand: Listening Skill- Its importance – Purpose- Process- Types- Barriers of Listening.
Practice: Introduction to Phonetics – Speech Sounds – Vowels and Consonants.

ICS Lab:
Understand: Communication at Work Place- Spoken vs. Written language.
Practice: Ice-Breaking Activity and JAM Session- Situational Dialogues – Greetings – Taking Leave – Introducing Oneself and Others.

Exercise – II
CALL Lab:
Understand: Structure of Syllables – Word Stress and Rhythm– Weak Forms and Strong Forms in Context.
Practice: Basic Rules of Word Accent - Stress Shift - Weak Forms and Strong Forms in Context.
ICS Lab:
Understand: Features of Good Conversation – Non-verbal Communication.
Practice: Situational Dialogues – Role-Play- Expressions in Various Situations –Making Requests and Seeking Permissions - Telephone Etiquette.

Exercise - III
CALL Lab:
Understand: Intonation-Errors in Pronunciation-the Influence of Mother Tongue (MTI).
Practice: Common Indian Variants in Pronunciation – Differences in British and American Pronunciation.
ICS Lab:
Understand: How to make Formal Presentations.
Practice: Formal Presentations.

Exercise – IV
CALL Lab:
Understand: Listening for General Details.
Practice: Listening Comprehension Tests.
ICS Lab:
Understand: Public Speaking – Exposure to Structured Talks.
Practice: Making a Short Speech – Extempore.

Exercise – V
CALL Lab:
Understand: Listening for Specific Details.
Practice: Listening Comprehension Tests.
ICS Lab:
Understand: Interview Skills.
Practice: Mock Interviews.

Minimum Requirement of infrastructural facilities for ELCS Lab:

1. Computer Assisted Language Learning (CALL) Lab has to accommodate 40 students with 40 systems, with one Master Console, LAN facility and English languagelearning software for self- study by students.

System Requirement (Hardware component):
Computer network with LAN facility (minimum 40 systems with multimedia) with the following specifications:
i) Computers with SuitableConfiguration
ii) High FidelityHeadphones
2. Interactive Communication Skills (ICS) Lab: A Spacious room with movable chairs and audio-visual aids with a Public-Address System, a LCD and a projectoretc.

Prescribed Lab Manuals:

- *ELCS Lab Manual – A Workbook for CALL and ICS Lab Activities*. Hyderabad,Orient Black Swan Pvt. Ltd. 2016.Print.
- Hart, Steve. Nair, Aravind R. and Bhambhani, Veena. *EMBARK- English for Undergraduates*. Delhi. Cambridge University Press. 2016.Print.

Suggested Software:

- Cambridge Advanced Learner's dictionary with CD, Fourthedition.
- Oxford Advanced Learner's Compass, 8th Edition, withCD.
- Hancock, Mark. *English Pronunciation in Use: Intermediate*. United Kingdom. Cambridge University Press,2007.
- TOEFL & GRE (KAPLAN, AARCO & BARRONS, USA, Cracking GRE byCLIFFS).

References:

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

Learning Outcomes: Students will be able to attain

1. Better understanding of nuances of English language through audio- visual experience and groupactivities
2. Neutralization of accent for intelligibility
3. Speaking skills with clarity and confidence which in turn enhancestheir employabilityskills.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J1502) PROGRAMMING FOR PROBLEM SOLVING LABORATORY

B.Tech I Year I-Semester: EEE

L	T	P	C
0	0	3	1.5

Course Objectives:

1. To study and understand the use of OScommands
2. To expose the undergraduate students to the practical implementation of C Programming concepts
3. To improve students capability in applying C Programming for problemsolving.
4. To make students use effective memory management techniques inprogramming
5. To expose students to modular programming concepts in problemsolving

<u>LIST OF EXPERIMENTS:</u>

Week 1: Study of OS commands

Week 2: Study of Compilation and execution of simple C programs

Week 3: Basic C Programs

a.Arithmetic Operations

b. Area and Circumference of a circle

c. Swapping with and without Temporary Variables

Week 4: Programs using Branchingstatements

a. To check the number as Odd orEven

b. Greatest of Three Numbers

c. CountingVowels

d. Grading based on Student's Mark

Week 5: Programs using ControlStructures

a. Computing Factorial of anumber

b. Fibonacci Series generation

c. Prime NumberChecking

d. Computing Sum ofDigit

Week 6: Programs using String Operations

a. PalindromeChecking

b. Searching and Sorting Names

Week 7: Programs using Arrays

Week 8: Programs usingFunctions

a. Computing nCr

b. Factorial usingRecursion

c. Call by Value and Call byReference

Week 9: Programs using Structure

a. Student Information System

b. Employee Pay SlipGeneration

c. Electricity Bill Generation

Week 10: Programs using Pointers

a. Pointer andArray

b. Pointer tofunction

c. Pointer toStructure

Week 11: Programs using File Operation

a. Counting No. of Lines, Characters and BlackSpaces

b. Content copy from one file toanother

c. Reading and Writing Data inFile

Text Books:

1. J. B. Dixit, "Computer Fundamentals and Programming in C", Firewall Media,2009.

2. Balagurusamy. E, "Programming in ANSI C", Tata McGraw Hill, Sixth edition,2012.

Course Outcomes:

1. Learn practical implementation of C programming languageconcepts.
2. Debug and document programs inC.
3. Know usage of logical skills in developing Cprograms.
4. Apply effective memory management techniques for problemsolving
5. Understand the file managementtechniques

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J2002) MATHEMATICS - II

B.TechI-YearII-Semester

L	T	P	C
3	1	0	4

Pre-requisites: Mathematical Knowledge at pre-university level

Objectives: The Students able to learn
1. Methods of solving the differential equations of first and higherorder.
2. Evaluation of multiple integrals and theirapplications
3. The physical quantities involved in engineering field related to vector valuedfunctions
4. The basic properties of vector valued functions and their applications to line, surfaceand volumeintegrals.

UNIT-I

First Order ODE: Exact, linear and Bernoulli's equations; Applications: Newton's law of cooling, Law of natural growth and decay; Equations not of first degree: equations solvable for p, equations solvable for y, equations solvable for x and Clairaut's type.

UNIT-II

Ordinary Differential Equations of Higher Order: Second order linear differential equations with constant coefficients: Non-Homogeneous terms of the type polynomials in, and ; method of variation of parameters; Equations reducible to linear ODE with constant coefficients: Legendre's equation, Cauchy-Euler equation.

UNIT-III

Multivariable Calculus (Integration): Evaluation of Double Integrals (Cartesian and polar coordinates); change of order of integration (only Cartesian form); Evaluation of Triple Integrals: Change of variables (Cartesian to polar) for double and (Cartesian to Spherical and Cylindrical polar coordinates) for triple integrals. Applications: Areas (by double integrals) and volumes (by double integrals and triple integrals).

UNIT-IV

Vector Differentiation: Vector point functions and scalar point functions. Gradient, Divergence and Curl. Directional derivatives, Tangent plane and normal line. Vector Identities. Scalar potential functions. Solenoidal and Irrotational vectors.

UNIT-V

Vector Integration: Line, Surface and Volume Integrals. Theorems of Green, Gauss and Stokes (without proofs) and their applications.

TextBooks:

1. B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36thEdition,2010
2. Erwin kreyszig, Advanced Engineering Mathematics, 9thEdition, John Wiley&Sons,2006
3. G.B. Thomas and R.L. Finney, Calculus and Analytic geometry, 9thEdition,Pearson, Reprint, 2002.

References:

1. Paras Ram, Engineering Mathematics, 2ndEdition, CBSPublishes
2. S. L. Ross, Differential Equations, 3rdEd., Wiley India,1984.

Outcomes: After learning the contents of this paper the student must be able to

1. Identify whether the given differential equation of first order is exact ornot
2. Solve higher differential equation and apply the concept of differential equation to realworld problems.
3. Evaluate the multiple integrals and apply the concept to find areas andvolumes.
4. Evaluate the line, surface and volume integrals and converting them from one toanother.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(UGC-AUTONOMOUS)

(J2007) ENGINEERING PHYSICS

B.Tech I-YearII-Semester:EEE **L T P C**

3 1 0 4

CourseObjectives:

1. Enable the student to connect the historical development of quantum mechanics and learn the basic principles of quantum mechanics and employs the Bloch's theorem to draw the band structure of solids on the basis of Kronig Pennymodel.

2. The students learn basic theory of semiconductors and principles and operations of optoelectronicdevices.

3. The Students to understand the basic properties of light, Concepts of LASER and it's engineeringapplications

4. Enable the students to learn the basic principles of dielectrics, magnetic superconductors and their engineering applications and also learn the preparation, dimensional characteristics of nano materials along with their engineeringapplications

5. Enable the students to learn about the types of oscillation, mechanics, which helps in analyzing and solving the engineeringproblems.

UNIT-I: Quantum Mechanics

Introduction to quantum mechanics**,** Wave nature of the particle, de-Broglie's hypothesis, Davisson and Germer's experiment, GP Thompson experiment, Heisen berg's uncertainty principle, Schrodinger time independent wave equation, Particle in one dimensional box.

Band theory of Solids: Electron in periodic potential – Bloch theorem**,** Kronig–Penny Model, Brillion zone concept, Effective mass of an electron, Origin of energy band formation- Classification of materials.

UNIT-II: Semiconductor Physics:

Introduction to intrinsic and extrinsic semiconductors, Carrier concentration in conduction band and valancy band of intrinsic and extrinsic semiconductor, Fermi level, Effect of carrier concentration and temperature on Fermi level, Hall Effect- Applications of semiconductors.

Semiconductor Optoelectronics: Radative and Non-radative recombination mechanisms in semiconductors, Formation of PN junction diode-V-I characteristics, Zener diode - characteristics, Solar cell and LED- Construction and working mechanism .

UNIT-III: Optics

Huygens' principle, Superposition of waves and interference of light by wave front splitting and amplitude splitting; Young's double slit experiment, Newton's rings, Michelson interferometer, Farunhofer diffraction from a single slit, Diffraction grating and resolving power.

LASERS: Introduction-characteristics of lasers, absorption, spontaneous emission, stimulated emission, Einstein's theory of matter radiation interaction and A and B coefficients; amplification of light by population inversion, Ruby laser, He-Ne laser, Semiconductor diode laser, applications of lasers in science, Engineering and Medicine

UNIT-IV: Dielectric Materials

Introduction-Types of Polarizations, derivation for electronic and ionic polarizabilities, internal fields in solids, Clausius Mossotti equation, Ferro electricity, structure of $BaTiO_3$, piezo-electricity.

Magnetic Materials: Introduction-origin of magnetic moment, Bohr Magneton, classification of Dia, Para and Ferro magnetic materials, Hysteresis curve, Soft and hard magnetic materials; Superconductivity- properties, BCS theory, Type –I &II Superconductors-Applications.

UNIT-V: Oscillations, waves

Simple harmonic motion, Damped and forced simple harmonic oscillator, damped harmonic oscillator – heavy, critical and light damping quality factor, forced mechanical oscillators, mechanical impedance, steady state motion of forced damped harmonic oscillator.

Mechanics: Motion of a rigid body in the plane; Rotation in the plane; Kinematics in a coordinate system rotating and translating in the plane; Angular momentum about a point of a rigid body in planar motion; Euler's laws of motion, their independence from Newton's laws, and their necessity in describing rigid bodymotion.

Text Books:

1. Introduction to Quantum Physics-Eisberg andResnick
2. J. Singh, Semiconductor Optoelectronics: Physics and Technology, McGraw-HillInc.
3. H.J. Pain, The Physics of vibrations andwaves
4. Quantum Mechanics-Decker
5. Ian G. Main, Oscillations and waves inphysics

REFERENCE :

1. Engineering Physics, P.K Palanisamy, ScitechPublications.
2. Applied Physics- Dr. N Chandra Shaker and P. AppalNaidu
3. Applied Physics for Engineers- P. Madhusudana rao, Academic PublishingCompany.
4. Engineering Physics, V. Rajandran, Tata mc. Graw Hill BookPublishers
5. Introduction to Mechanics — MKVerma

Course Outcomes:

1. The student learns about solving engineering solutions employing the quantum mechanical concepts

2. The students learns about the physics of semiconductor materials and along with their applications in science and engineering

3. The student learns about the construction, working and applications of LASER inengineering.

4. The students get exposure to dielectric and magnetic materials and their engineering applications.

5. The students learn about theory of waves and oscillation and mechanics of rigid bodies for engineeringapplications.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J2008) ENGINEERING CHEMISTRY

B.TechI-YearII-Semester:EEE

L	T	P	C
3	1	0	4

Course Objectives:

1. To achieve the knowledge about various kinds of Orbitals & Splittingpatterns.
2. To know about the water quality and its parameters, learning the knowledge in the assessment of water quality andpurification.
3. To achieve the knowledge about various kinds of Electrochemical cells and batteries and corrosionphenomenon.
4. To understand the reactions, mechanism and stereochemistry of organicmolecules.
5. Understand the principle, instrumentation and applications of Spectroscopictechniques.

Unit-1: Molecular structure and Theories of Bonding:

Atomic and Molecular orbitals. Linear Combination of Atomic Orbitals (LCAO), molecular orbitals of diatomic molecules, molecular orbital energy level diagrams of N_2,O_2 and F_2 molecules. π molecular orbitals of butadiene and benzene.

Crystal Field Theory (CFT): Salient Features of CFT – Crystal Field Splitting of transition metalion d- orbitals in Tetrahedral, Octahedral and square planar geometries. Band structure of solids and effect of doping onconductance.

Unit-2: Water and its treatment:

Introduction – hardness of water – Causes of hardness - Types of hardness: temporary and permanent – expression and units of hardness – Estimation of hardness of water by complexometric method. Potable water and its specifications. Steps involved in treatment of water – Disinfection of water by chlorination and ozonization. Boiler feed water and its treatment – Calgon conditioning, Phosphate conditioning and Colloidal conditioning. External treatment of water – Ion exchange process. Desalination of water – Reverse osmosis. Numerical problems.

Unit-3: Electrochemistry and corrosion:

Electro chemical cells – electrode potential, standard electrode potential, types of electrodes – calomel, Quinhydrone and glass electrode. Nernst equation Determination of pH of a solution by using quinhydrone and glass electrode. Electrochemical series and its applications. Numerical problems. Potentiometric titrations. Batteries – Primary (Lithium cell) and secondary batteries (Lead – acid storage battery and Lithium ion battery).

Causes and effects of corrosion – theories of chemical and electrochemical corrosion – mechanism of electrochemical corrosion, Types of corrosion: Galvanic, water-line and pitting corrosion. Factors affecting rate of corrosion, Corrosion control methods- Cathodic protection – Sacrificial anode and impressed current cathodic methods. Surface coatings – metallic coatings – methods of application. Electroless plating of Nickel.

Unit-4: Stereochemistry, Reaction Mechanism and synthesis of drug molecules:

Introduction to representation of 3-dimensional structures, Structural and stereoisomers, configurations, symmetry and chirality. Enantiomers, diastereomers, optical activity and Absolute configuration. Conformation alanalysis of n- butane.

Substitution reactions: Nucleophilic substitution reactions: Mechanism of S_N1, S_N2 reactions. Electrophilic and nucleophilic addition reactions: Addition of HBr to propene. Markownikoff and anti Markownikoff's additions. Grignard additions on carbonyl compounds. Elimination reactions: Dehydro halogenation of alkylhalides. Saytzeff rule. Oxidation reactions: Oxidation of alcohols using $KMnO_4$ and chromicacid.

Reduction reactions: reduction of carbonyl compounds using $LiAlH_4$& $NaBH_4$. Hydroboration of olefins. Structure, synthesis and pharmaceutical applications of Paracetamol and Aspirin.

Unit-5: Spectroscopic techniques and applications:

Principles of spectroscopy, selection rules and applications of electronic spectroscopy. vibrational and rotational spectroscopy. Basic concepts of Nuclear magnetic resonance Spectroscopy, chemical shift. Introduction to Magnetic resonance imaging.

Text books:

1. Text Book of Engineering Chemistry by A.Jayashree, Wiley publications, NewDelhi.
2. Engineering Chemistry by P.C. Jain and M. Jain, Dhanpatrai Publishing Company, NewDelhi
3. Text Book of Engineering Chemistry by ShashiChawla.
4. Engineering Chemistry by Rama Devi, Venkata Ramana Reddy and Rath, Cengagelearning, New Delhi.(2016).
5. Text Book of Engineering Chemistry by C. Parameshwara Murthy. B.S.Publications.
6. Text Book of Engineering Chemistry by Y. Bharathi kumari and Jyotsna Cherikuri, VGS Publications.

Course Outcomes:

Students will gain the basic knowledge of atomic and molecular orbitals & Splitting patterns.

1. They can understand the basic properties of water and its usage in domestic and industrial purposes.
2. To gain the knowledge about the Electrochemical cells, batteries and corrosion phenomenon.
3. They learn about organic reactions and the stereochemistry of organicmolecules.
4. They can predict potential applications of spectroscopy and practical utility in order to become good engineers and entrepreneurs.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J2503) OBJECT ORIENTED PROGRAMMING

B.TechI-YearII-Semester:EEE

L	T	P	C
3	0	0	3

Course Objectives:
1. To expose the students to the concepts of Object-OrientedParadigm
2. To improve students capability in applying object oriented programming concepts in problemsolving.
3. To improve students expertise in implementing object oriented concepts using C++Programming
4. To enable students to understand concepts of templates and exceptionalhandling.
5. To study the concepts of Assembler, Macro Processor, Loader andLinker

UNIT- I
Principles of Object Oriented Programming: Procedure Vs Object Oriented, Paradigm, Basic concepts, benefits, Applications and Object Oriented Languages.

Introduction: Program structure, Creating, Compiling and Linking of C++ program.

Token, Expression and Control Structures: Tokens, Keywords, Identifiers and Constants, Data Types, Operators, Precedence, Type Compatibility, Control Structures, New Features of C++.
Functions: Function Prototype and Parameter Passing, Inline Functions, Default, Constant Arguments, Recursion, Function Overloading, Function Template.

UNIT -II
Classes and Objects: Defining classes and Member functions, Arrays, Static Members, Friend Functions.
Constructors and Destructors: Type of Constructors, Dynamic Initialization of Objects, Destructors.

UNIT – III
C++ operator overloading: Fundamentals, restrictions, overloading unary / binary operators, overloading ++ and --, Manipulation of Strings.
C++ Inheritance: Defining derived classes, Types of Inheritance, Virtual Base class Abstract Class, Nesting of classes.

UNIT- IV
Pointers and Polymorphism: Pointers and Generic pointer, Pointer to Objects and Derived Classes, this pointer, Virtual Functions, Virtual Destructors.
C++ Stream Input/Output: Streams, Stream classes, Formatted and Unformatted operations, Manipulators. **Files:** Classes for file Stream operations, Sequential and Random access operations, Command line Arguments

UNIT-V
C++ Templates: Introduction, class templates, member function template, overloading template functions.
C++ Exception Handling: Try, throw, catch

Text Books:

1. E. Balagurusamy **“**Object Oriented Programming with C++” , McGraw-Hill Education (India), 6th Edition 2013
2. Bjarne Stroustrup “The C++ Programming Language”, Pearson Education, 5th Edition(2013)
3. Robert Lafore **“**Object-Oriented Programming in C++ “ 4th Edition Sams Publishing,2002

Reference Books:

1. K.R. Venugopal, Rajkumar, T.Ravishankar, “Mastering C++”, McGraw-Hill Education India Pvt.Ltd, Second Edition, ISBN: 0-07-463454-2, 1997.
2. Timothy Bud, “An Introduction to Object Oriented Programming”, Pearson Education, SecondEdition, ISBN 81-7808-228-4,2004.

Course Outcomes:

1. Know the differences between procedural language and object-oriented languages
2 .Gain knowledge of Object-Oriented Paradigm for problem solving
3.Will be able to gain practical knowledge of OOP concepts usingC++
4.Apply reusability concepts like inheritance, polymorphism in application development
5.Use generic programming concepts and modularprogramming.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(UGC-AUTONOMOUS)

(J2504) OBJECT ORIENTED PROGRAMMING LAB

B.Tech I-YearII-Semester:EEE	**L**	**T**	**P**	**C**
	0	**0**	**3**	**1.5**

Course Objectives:
1. To expose the students to the practical implementation of Object-Oriented concepts using C++ programminglanguage
2. To improve students capability of object oriented programming for problemsolving
3. This course provides in-depth coverage of object-oriented programming principles and techniques using C++.
4. Topics include classes, overloading, data abstraction, information hiding, encapsulation, inheritance, polymorphism, file processing, templates, exceptions, container classes, and low-level languagefeatures.
5. To make students capable of using reusability and generic programming concepts indeveloping applications

LIST OF EXPERIMENTS:

Experiment-I
1. Read 10 numbers and displays them in sortedorder.
2. Write functions to swap two numbers using pointers andreferences.
3. Write a program that prints the sizes of the fundamental types, a few pointer types and a few enumeration of your choice. Use the size ofoperator.

Experiment-II
4. Write a function that counts the number of occurrences of pair of letters in a string, for example thepair "ab" appears twice in"xabaacbaxabb".
5. Find LCM of two, three and four numbers using functionoverloading.
6. Create a structure for storing students details (sno, sname, course, Array of five subject's marks) provide the functions for printing the total marks, calculating percentage and the result. (Note: Include the functions within thestructure).

Experiment-III
7. Write a macro to find square (A+B)-square(C+D).
8. Create a class for complex number and provide methods for addition, subtraction, multiplicationand division. Display the output in "a+ib"form.
9. Create a Distance class and provide methods for addition and subtraction of twodistances.

Experiment-IV
10. Create a complex number class with default, parameterized, copy constructors and adestructor.
11. Create a class which provides a method to count the number of objects that are created for that class. (Use staticmethod).
12. Create a class INT that behaves exactly like an int. (Note: overload +, -, *, /,%).

Experiment-V
13. Create a string class and overload + to concatenate two Strings, overload () to print substring and overload <, <=, >, >=, = = operators to compare two stringobjects.
14. Create Date class and overload ++ to print next date and overload -- to print previousdate.

Experiment-VI
15. Create a user defined array class Array and overload + to add two arrays, overload * to multiplytwo arrays, overload [] to access given position element and also to use left side of an assignmentoperator.
16. Create a complex number class and overload +, -, * operators using friendfunctions.
17. Program to perform Matrix operations using operator overloading with friendfunctions.

Experiment-VII
18. Programs to demonstrate Single, Multiple, Multilevel, Hierarchical, Hybrid and Multipathinheritance.
19. Programs to demonstrate constructors ininheritance.

Experiment-VIII
20. Create a Shape class with methods perimeter, area. Derive classes Circle, Square and Triangle from Shape class. Provide implementation for perimeter, area in the derived classes. (Declare perimeter, area as pure virtual functions).
21. Implement Multipath inheritance by declaring pointers to base class and access the derivedclass methods using base classpointers.
22. Program to demonstrate ofmanipulators

Experiment-IX
23. Write a function template to overload max method, which can find maximum of any datatype.
24. Create function template to sort an array, which can sort array of anytype.
25. Create a Generic calculator class to perform +, -, *, / operations on anytype.
26. Create a Generic class for array of variable size and provide sorting, searching on anytype.

Experiment-X
27. Find the roots of a quadratic equation. Handle exception for divide byzero.
28. Handle the Array Index out of Bounds Exception when accessing the elements ofArrays.
29. Create a text file of student information and display the contents offile.

Experiment-XI
30. Write a program to read a text file and remove all white space characters and replaceeach alphanumeric character with next character in the alphabet (Replace z by a and 9 by0).
31. Copy the contents of one file into another except the blank lines using command linearguments.
32. Create a file with floating point numbers. Read pair of floating numbers from the file and write into anotherfile.

Experiment-XII
33. Read the contents of three files concatenate them and displayit.
34. Write complex numbers into a file in binary format and in characterformat.
35. Create a class with integers and overload << to place integer into a file and overload >> to read an integer.

Course Outcomes:
After completion of the course, the student will be able to…
1: gain knowledge of implementing Object-Oriented Programming concepts using C++
2: know the application of Object-Oriented Programming concepts for developing applications
3: debug and document programs in C++
4: develop applications using modularization technique
5: apply reusability and generic programming concepts in application development

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J2009) ENGINEERING PHYSICS AND CHEMISTRY LAB

	L	T	P	C
B.TechI-YearII-Semester:EEE	**0**	**0**	**3**	**1.5**

COURSE OBJECTIVES:

This course on Physical Sciences lab has been designed with 18 experiments in Physics and Chemistry. The objective of the course is that

1. Student will have exposure to various experimental skills which is very essential foran engineeringstudent.
2. The experiments are selected from various areas of physics and chemistry likePhysical Optics, Lasers, Fiber optics, waves and oscillations, semiconductors, Electricity, Conductometry, Potentiometry,etc...
3. The student is also exposed to various tools like Screw Gauge, Vernier callipers,Physical balance, Spectrometer, Microscope, Viscometer, and stalagmometer,etc…

PHYSICS LAB (CYCLE-1)

(Any Six Experiments compulsory)

1. Determination of Eenergy gap of semiconductor material of p-n junctiondiode.
2. Determination of frequency of electrical vibrator by using Melde'sexperiment.
3. Determination of wavelength of LASER by using diffractiongrating.
4. Determination of rigidity modulus of a given wire using Torsionalpendulum.
5. R-C circuitanalysis.
6. Determination of Numerical aperture of a given opticalfiber.
7. Determination of the radious of curvature of plano-convex lens by formingNewton's rings
8. LED-characteristics

CYCLE-

2CHEMISTRY

LAB

1. Determination of total hardness of water by complexometric method usingEDTA
2. Estimation of an HCl by Conductometrictitrations
3. Estimation of Acetic acid by Conductometrictitrations
4. Estimation of HCl by Potentiometrictitrations
5. Determination of rate constant of acid catalysed hydrolysis of methylacetate
6. Synthesis of Aspirin andParacetamol
7. Thin layer chromatography calculation of R_f values. egortho and para nitrophenols
8. Verification of freundlich adsorption isotherm-adsorption of acetic acid oncharcoal
9. Determination of viscosity of castor oil and ground nut oil by using Ostwald's viscometer.
10. Determination of surface tension of a give liquid usingstalagmometer.

Laboratory Manuals:

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

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(UGC-AUTONOMOUS)

(J2304) ENGINEERING WORKSHOP & IT WORKSHOP

B.TECH. I YEAR – II SEM: EEE	**L**	**T**	**P**	**C**
	1	**0**	**3**	**2.5**

COURSE OBJECTIVES:

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

UNIT – I

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

1. Carpentry2
2. Fitting2
3. Tin – Smithy 2
4. Black Smithy1
5. House – wiring2
6. Plumbing 1

UNIT - II

TRADES FOR DEMONSTRATION & EXPOSURE

1. Demonstration of Powertools
2. Welding.

UNIT – III

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

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

TEXTBOOKS:

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

COURSE OUTCOMES:

The students will be able to

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

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B.TECH

IIYEAR
I & II SEMESTER
SYLLABUS

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(UGC-AUTONOMOUS)

(J3003) Transforms and Complex variables

B.TechII-YearI-Semester:EEE **L T P C**

3 1 0 4

Course Objectives: To learn

1. Concept, properties of Laplacetransforms
2. Solving ordinary differential equations using Laplace transformstechniques.
3. Expressing a periodic function by Fourier series and a non-periodic function by Fourier transforms
4. Differentiation and integration of complex valuedfunctions.
5. Evaluation of integrals using Cauchy's integral formula and Cauchy's residuetheorem.
6. Expansion of complex functions using Taylor's and Laurent'sseries.
7. Evaluation of the real integrals and transformations of one plane to anotherplane.

UNIT-I: Laplace Transforms

Laplace Transforms; Laplace Transform of standard functions; first shifting theorem; Laplace transforms of functions when they are multiplied and divided by't'. Laplace transforms of derivatives and integrals of function; Evaluation of integrals by Laplace transforms; Laplace transforms of Special functions; Laplace transform of periodic functions.

Inverse Laplace transform by different methods, convolution theorem (without Proof), solving ODEs by Laplace Transform method.

UNIT-II: Fourier series &Fourier transforms

Fourier series, Dircherlet's Conditions, Half-range Fourier series. Fourier Transforms, Fourier Sine and cosine transforms, Inverse Fourier transforms

UNIT-III: Complex Variables (Differentiation)

Limit, Continuity and Differentiationof Complex functions. Cauchy-Riemann equations (without proof), Milne- Thomson methods, analytic functions, harmonic functions, finding harmonic conjugate; elementary analytic functions (exponential, trigonometric, logarithm) and their properties

UNIT-IV: Complex Variables (Integration)

Line integrals, Cauchy's theorem, Cauchy's Integral formula, Liouville's theorem, Maximum-Modulus theorem (All theorems without proof); zeros of analytic functions, singularities, Taylor's series, Laurent's series; Residues, Cauchy Residue theorem (without proof)

UNIT-V: Evaluation of real integrals and conformal transformation

Evaluation of Real Integrals using Residues: ,

Introduction, linear and inverse Transformations, Bilinear Transformations, Conformal mapping

Text Books:

- B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36thEdition,2010.
- S.S. Sastry, Introductory methods of numerical analysis, PHI, 4th Edition,2005.
- J. W. Brown and R. V. Churchill, Complex Variables and Applications, 7th Ed., Mc-Graw Hill,2004.

References

- M. K. Jain, SRK Iyengar, R.K. Jain, Numerical methods for Scientific andEngineering Computations , New Age International publishers.
- Erwin kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley &Sons,2006.

Course outcomes:

After learning the contents of this paper the student must be able to

1. Use the Laplace transforms techniques for solvingODE's
2. Express any periodic function in terms of sines andcosines.
3. Express a non-periodic function as an integralrepresentation.
4. Analyse the complex function with reference to their analyticity, integrationusing Cauchy's integral and residuetheorems
5. Taylor's and Laurent's series expansions of complexfunction
6. Evaluate the real integrals and transformations of one plane to anotherplane

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J3205) ELECTROMAGNETIC FIELDS

B.Tech II Year I-SemesterEEE	**L T P C**
	2 1 0 3

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

Course Objectives:
1. To Study the relation between the electric field and the magnetic field, about the various laws governing the concepts of thesefields.
2. To understand the behavior of conductors and dielectrics, their boundary conditions, Maxwell's equations with respect to electrostatics and magnetostatics.
3. To utilize the concepts related to Static magnetic fields – Biot-Savart'slaw
4. To utilize the concepts related to time varying fields, about scalar and vector magnetic potential, self and mutualinductance.
5. To Study the phenomena of energy stored and energy density in electrostatics and magneto statics, and Poyntingtheorem

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= $_{v}$ – 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 –Boundary conditions –Conductor and Dielectric Boundary conditions– Capacitance – Capacitance of parallel plates, spherical and co-axial capacitors – with composite dielectrics – Energy stored and energy density in a static electric field – Current density – conduction and Convection current densities – Ohm's law in point form – Equation of continuity

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

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

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

UNIT – V

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

TEXT BOOKS

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

REFERENCE BOOKS:

1. "Introduction to ElectroMagnetics" by CR Paul and S.A. Nasar, Mc-Graw HillPublications
2. " Engineering Electro magnetics" by Nathan Ida, Springer(India) Pvt. Ltd. 2ndEdition
3. "Introduction to Electro Dynamics" by D J Griffiths, Prentice-Hall of India Pvt.Ltd,2ndedition
4. "Electromagnetics" by Plonsy andCollin
5. "Static and Dynamic Electricity"Smyth.
6. "Electromagnetics" by J P Tewari.
7. "Electromagnetics" by J. D Kraus Mc Graw-Hill Inc. 4th edition1992.

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

1. The relation between the electric field and the magnetic field, about the various laws governing the concepts of thesefields.
2. The behavior of conductors and dielectrics, their boundary conditions, Maxwell's equations with respect to electrostatics and magneto statics.
3. The concepts related to Static magnetic fields – Biot-Savart'slaw
4. The concepts related to time varying fields, about scalar and vector magnetic potential, self and mutualinductance.
5. The phenomena of energy stored and energy density in electrostatics and magneto statics, the concepts of conduction, convection and displacement current density, their equations, Power in EM fields and Poyntingtheorem.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J3206) ELECTRCAL CIRCUITS-I

B.Tech II Year ISemesterEEE	**L T P C**
	2 1 0 3

Course Objectives:

1. To Study the basics of circuit concepts, electrical parameters, and SourceTransformation
2. To Study the single phase AC circuits, three phase AC circuits andResonance
3. To Understand Locus diagrams, steady state and Transient analysis of AC & DCcircuits
4. To Study various circuits using network theorems ,analyzing Two-PortNetworks
5. To Study the series and parallel magneticcircuits

UNIT-I

Introduction to Electrical circuits: Ohm's law, R-L-C parameters, Voltage and Current sources, dependent and independent sources, Source Transformation, Voltage & Current relationship for passive elements for different input signals (square, ramp, saw-tooth, triangular).KCL, KVL, network reduction techniques, series, parallel, series-parallel, Star-Delta, Delta-Star transformations. Nodal analysis, Mesh analysis, Super node and Super mesh for DC excitations.

UNIT-II

Single phase AC Circuits: R.M.S, average values and 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, Resonance: Series, parallel circuits, concept of bandwidth and Q-factor.

Three phase circuits: Phase sequence – Star and delta connection – Relation between line and phase voltages

UNIT –III

Locus diagram: Series R-L, R-C, R-L-C and parallel combination with variation of various parameters.

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.

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.

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

UNIT-V

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 magneticcircuits.

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 GrawHill
3. Electrical Circuits by A.Chakrabarthy, Dhanpat Rai &Sons.

Reference Books:

1. Network Analysis by M.E. VanValkenberg.
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.RJeswaram, Pearson Education,2004.
4. Basic Circuits Analysis by D.R. Cunningham & J.A. Stuller, JaicoPublications.

Course Outcomes:

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

1. Basics of circuit concepts, electricalparameters,
2. Single phase AC circuits, Three Phase AC circuits,Resonance
3. Locus diagram, Steady state analysis of AC & DCcircuits
4. Various circuits using network theorems and Two–port networkparameters
5. Analysis of series and parallel magneticcircuits

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

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J3210) DC MACHINES & TRANSFORMERS

B.Tech. II-YearI-SemesterEEE **L T P C2 1 0 3**

Pre requisites: To learn this course student should have the concepts on the following subjects: In depth knowledge of physics oriented toward dynamics, heat, electricity, magnetism and calculus, analytical co-ordinate geometry and trigonometry.

Course Objectives:

1. To introduce the concept of rotating machines and the principle of Electro mechanical energyconversion.
2. To understand the functioning of different types of D.C. generators and study their performance.
3. To study the different types of D.C. generatorsCharacteristics.
4. To study the working principles of various types of D.C. motors and their load characteristics, starting and methods of speedcontrol.
5. To estimate the various losses occurring in D.C. machines and to study the different testing methods to derive its efficiency characteristics.

UNIT –I

Basic Principles of Rotating Electrical machines: Principles of Electromechanical Energy Conversion, Singly and doubly excited systems.

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. -Numerical Problems

UNIT –II

Armature reaction: Cross magnetizing and de-magnetizing AT/pole– Interpoles, compensating winding–commutation–reactance voltage–methods of improving commutation. 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 excitation and remedial measures. Applications and Load characteristics of shunt, series and compound generators. Parallel operation of dc generators, Load sharing, Use of equalizer bars. -Numerical Problems

UNIT –III

D.C Motors: Principle of operation–Back E.M.F, Torque equation, Classification of dc motors – Characteristics and application of shunt, series and compound motors–Armature reaction and commutation. Speed control of D.C. Motors: Armature voltage and field flux control methods. Motor starters (3 point and 4 point starters). -NumericalProblems

Losses in D.C. machines: Losses–Constant &Variable losses– calculation of efficiency condition for maximum efficiency. -Numerical Problems

Testing of dc machines: Direct, indirect and regenerative testing- Brake Test, Swinburne's Test, Hopkinson's Test, Retardation Test, Field's Test, and Operating Characteristics & Applications of dc motors. -Numerical Problems

UNIT –IV

Single phase Transformer: Principle of operation, constructional details of 1-phase Transformer, ideal transformer, Emf equation. Operation on no load and on load with phasor diagrams, Magnetic flux leakage, Equivalent- Resistor, Reactance, Impedance, Regulation, Efficiency- Numerical Problems on Regulation, Efficiency and All day efficiency. Losses in Transformer, variation of core losses depends on supply voltage and frequency, Separation of Core losses. -Numerical Problems

Testing of Transformer: Polarity test, O.C & S.C tests, Sumpner's test, Parallel operation, Load sharing.

Auto Transformer: Principle of working, saving of copper as compared to two winding Transformer and applications. -Numerical Problems

UNIT –V

Three Phase Transformers: Three phase transformers connections Y-Y, Δ-Δ, Δ-Y, and Y-Δ, with clock notation, Tertiary winding, V-V and Scott connections, Three winding Transformer, determination of Zp, Zs and Zt Transients in Switching

Tap Changing Transformers: Concept of tap changing, on-load and off load tap changers

Text Books

1. Electric Machines by I.J. Nagarath &D.P. Kothari, Tata McGraw–Hill Publishers, 3rdedition,2004.
2. Electro mechanics–I (D.C. Machines) S. Kamakshaiah, Hi-TechPublishers.
3. Electrical Machines byRajput

ReferenceBooks

1. Performance and Design of D.C Machines–by Clayton &Hancock, BPBPublishers
2. Electric Machinery– A.E.Frizgerald, C.Kingsley and S.Umans, McGraw- Hill Companies,5thediton
3. Electrical Machines–P.S. Bimbra., Khannapublishers
4. Electrical Machines -Bandhyopadhyaya

Course Outcomes:

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

1. Principle of Energy Conversions andtransformers
2. Construction and Operation of Generators, Motors andtransformers
3. Characteristics of Different Generators & Motors, Remedies to overcome the Problems of failure ofGeneration.And to increase the employability
4. Applications and Speed control of DCMotors.
5. Testing of DC Machines andtransformers

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JAYMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)
(J3401) ELECTRONIC DEVICES AND CIRCUITS

B.Tech. II Year I Sem: ECE& EEE **L TP C3 0 0 3**

Objectives:
This is a fundamental course, which provides basic knowledge and essential to be learned by every circuit branch student. This course will focus:
1. to understand the principles and working of PN Diode as a Rectifier and Circuit element aRegulator.
2. to understand basic principles and working of BJT,FET and SpecialDevices.
3. to understand basic principles and working of different types ofFETs.
4. to understand Biasing and stabilization concepts of BJT.
5. to understand Special purpose devices such as Solar cells, LED, UJT &SCR

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

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

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

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

UNIT-V:
FIELD EFFECT TRANSISTOR:
Construction, principle of operation, symbol and Volt-Ampere characteristics of JFET and MOSFET.
Special Purpose Devices and Their Operations: Varactor Diode, Tunnel Diode, Photo Diode, LED, Solar Cell ,UJT & SCR.

TEXT BOOKS:
1. Electronic Devices and Circuits – David A. Bell, Oxford UniversityPress
2. Electronic Devices and Circuits – S.Salivahanan, N.Suresh Kumar, A.Vallavaraj,TMH.
3. Semiconductor Physics and Devices – D.Neamen, D. Biswas, McGrawhill Education Publications

REFERENCE BOOKS:

1. Electronic Devices and Circuits – J. Millman, C.C. Halkias, SatyabrathaJit,TMH.
2. Electronic Devices and Circuits – R.L. Boylestad and Louis Nashelsky, ,PEI/PHI.
3. Electronic Devices and Circuits - K. Lal Kishore,BSP.

COURSE OUTCOMES:

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

1. Understand and Analyse the different types of diodes, operation and itscharacteristics.
2. Design and analyse the DC bias circuitry of BJT andFET.
3. Design biasing circuits using diodes andtransistors.
4. To analyze and design diode application circuits, amplifier circuits and oscillators employing BJT, FETdevices.
5. To analyze and understand the special purpose diodes and their application inindustry.

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JAYMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J3404) ELECTRONIC DECVICES AND CIRCUITS LAB

II Year I Sem B.Tech: ECE&EEE **L T P C**
0 0 3 1.5

PART A: (Only for Viva-voce Examination)
Electronic Workshop Practice (In 3 Lab Sessions):

1. Identification, Specifications, Testing of R, L, C Components (ColorCodes) Bread Boards,PCB"s
2. Identification, Specifications and Testing of ActiveDevices.
   Study and operationof
3. DigitalMultimeters
4. FunctionGenerator
5. Regulated PowerSupplies
6. CRO.

PART B:

1. Forward & Reverse Bias Characteristics of PN JunctionDiode
2. Zener diode characteristics & Zener voltageRegulator.
3. Half Wave Rectifier with & without filters.
4. Full Wave Rectifier with & without filters.
5. Input & Output Characteristics of Transistor in CBConfiguration.
6. Input & Output Characteristics of Transistor in CEConfiguration.
7. Calculation of h-Parameters from CEcharacteristics.
8. FETcharacteristics.
9. UJTCharacteristics.
10. Design of self biascircuit.

PART C: Equipment required for Laboratories:

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

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J3207) ELECTRICAL CIRCUITS LAB

B.Tech. II Year I-SemesterEEE

L	T	P	C
0	0	3	1.5

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

1. Verification of Kirchhoff's laws and Tellegen'sTheorem.
2. Verification of Thevenin's and Norton'sTheorems.
3. Verification of Superposition and ReciprocityTheorems
4. Verification of Maximum power transferTheorem
5. Locus Diagrams of RL and RC SeriesCircuits.
6. Series and ParallelResonance.
7. Two port network parameters – Z – Y parameters, Analyticalverification.
8. Two port network parameters – A, B, C, D & Hybrid parameters, Analyticalverification.

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

1. Measurement of voltage and current in 3-Phase star and deltanetworks.
2. Measurement of Active power for Star and Delta connected balancedloads.
3. Verification of Millman's Theorem and Compensationtheorem.
4. Determination of Self, Mutual Inductances and Coefficient ofcoupling.
5. Time response of first order RC / RL network for periodic non – sinusoidal inputs –Time constant and Steady state error determination.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J3211) ELECTRICAL MACHINES – I LAB

B. Tech. II Year I-Sem EEE	L	T	P	C
	0	0	3	1.5

The following experiments are required to be conducted compulsory experiments:

1. Magnetization characteristics of DC shuntgenerator.
2. Load test on DC shuntgenerator.
3. Load test on DC seriesgenerator.
4. Load test on DC compoundgenerator.
5. Swinburne’s test on DC Shunt Machine and Speed control of DC shuntmotor.
6. Brake test on DC compoundmotor.
7. Hopkinson’s tests on DC shuntmachines.
8. Field’s test on DC seriesmachines.

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

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

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(JMC01) ENVIRONMENTAL SCIENCE

B.TechII-YearI-Semester	L	T	P	C
	3	0	0	0

Course Objectives:

1. Understanding the importance of ecological balance for sustainabledevelopment.
2. Understanding the impacts of developmental activities and mitigationmeasures.
3. Understanding the environmental policies andregulations.

UNIT –I

Human Environment and Ecosystem: Introduction, Types of Environment (Natural Environment and its components). Man Made Environment, Social Environment, Concern about the environment, Potential hazards of carelessness in development activities (Bhopal tragedy, Chernobyl Accident).

Eco System: Definition, Types, structure, functional components of ecosystem, food chain and food web, flow of energy in an ecosystem, ecological pyramids, Bio magnification, Bio geochemical cycles (Gaseous and sedimentary cycles), ecosystem services and values.

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, genetic, species and ecosystem diversity, value of biodiversity; consumptive use, productive use, social, ethical, aesthetic and optional values, India as a mega diversity nation, Hot spots of biodiversity, threats to biodiversity; habitat loss, poaching of wildlife, man-wildlife conflicts; conservation of biodiversity: In-situ and Ex-situ conservation.

UNIT –IV

Environmental Pollution and Control Technologies:
Environmental Pollution: Classification of Pollution
Air Pollution: Primary and Secondary pollutants, air pollution problems, Ambient Air Quality Standards
Water Pollution: Source and types of pollution, problems due to water pollution, drinking water quality standards.
Soil Pollution: Source and types, Impacts of modern agriculture, degradation of soil.
Noise Pollution: Sources and health hazards, standards.
Solid Waste: Municipal solid waste management, composition and characteristics of E-waste and its management.
Pollution Control Technologies: Wastewater treatments methods: Primary, secondary, tertiary

UNIT –V

Global Environmental Problems and Global Efforts: Climate change and impact on human environment. Ozone depletion and Ozone depleting substance (ODS). Acid rains, Deforestation anddesertification.

International Conventions/Protocols: Earth Summit, Kyoto protocol and Montreal Protocol.

Text Books:

1. Text book of Environmental Studies for undergraduates courses by Erach Bharucha for University GrantsCommission.
2. Environmental Studies by R.Rajagopalan, Oxford University Press.

Reference:

1. Environmental Science: towards a sustainable future by Richard T.Wright. 2008 PHL Learning Private Ltd. NewDelhi
2. Environmental Engineering and Science by Gilbert M. Masters and Wendell P. Ela 2008 PHI LearningPvt.Ltd
3. Environmental Science by Daniel B. Botkin and Edward A.Keller, Wiley IndiaEdition.
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 Publication.

Course Outcomes: After undergoing the course the student would be able to know about

1. Understanding ofEcosystem
2. Natural resources, Depletion of natural resources and preventionmethods
3. Biodiversity, Protection, sharing of thebiodiversity.
4. Environmental pollution- Understanding of water, soil, noise and air pollution and their controlmeasures.
5. Students can understand about global environmental problems and they are aware of globalefforts.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J4212) ELECTRICAL CIRCUITS-II

B. Tech. II Year II- SemesterEEE

L	T	P	C
2	**1**	**0**	**3**

Pre-Requisites: To learn this course, the students are required to have the basic concepts out of the following subjects:
Electrical Circuits-I, Mathematics-I, Mathematics-II

Course Objectives:

1. To Study the Three Phase balanced and unbalancedcircuits
2. To Study the Networkfunctions
3. To Analyze Concept and Design of various types of passiveFilters
4. To study Fourier analysis of A.C. Circuits and FourierTransforms
5. To Design the Electrical Circuit using Graph theory

UNIT – I

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 – II

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

UNIT – III

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

UNIT – IV

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.

UNIT – V

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

TEXT BOOKS:

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

REFERENCE BOOKS:

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

Course Outcomes:

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

1. Analysis of Balanced and Unbalanced Three-phase systems Measurement of power in 3-Phase Systems usingwattmeter's
2. Poles and zeros of network function–necessary conditions for driving point functions and transfer functions
3. Operation and design of various filtercircuits
4. Fourier transforms Analysis of AC circuit through Fourierseries
5. NetworktopologyWith which he/she can be able to apply the above conceptual things to the real world electrical and electronics problems and applications.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J4213) ACMACHINES

B.Tech. II-YearII-SemesterEEE **L T P C2 1 0 3**

Pre requisites: To learn this course student should have the concepts on the following subjects: In depth knowledge of physics oriented toward dynamics, heat, electricity, magnetism and calculus, analytical co-ordinate geometry and trigonometry, DC Machines and Transformers

Course Objectives:

1. To deal with the detailed analysis of poly phase Synchronousgenerators.
2. To introduce the concept of regulation and its calculations
3. To introduce the concept of parallel operation of synchronousgenerators.
4. To deal with the detailed analysis of poly phase synchronousmotors
5. To understand operation, construction and types of single phase motors andtheir applications in house hold appliances and controlsystems

UNIT-I

Polyphase Induction Motors: Polyphase induction motors-construction details of cage and wound rotor machines-production of rotating magnetic field - principle of operation - rotor EMF and rotor frequency - rotor reactance, rotor current and pf at standstill and during operation, Slip speed, slip, rotor power input, rotor copper loss and mechanical power developed and their inter relation- -Numerical Problems

UNIT-II

Characteristics of Induction Motors: Torque equation - expressions for maximum torque and starting torque – torque-slip characteristics - equivalent circuit - Phasor diagram - crawling and cogging. -Numerical Problems-Testing of Induction Motor: No-load Test and Blocked rotor test –Predetermination of performance using Circle Diagram-Numerical Problems-Methods of starting-Starting current and Torque calculations. Speed Control Methods: Speed control-change of voltage, change of frequency, V/f, injection of an EMF into rotor circuit – Numerical Problems- Induction generator – principle of operation and its role in electrical systems.

UNIT-III

Construction, Principle of operation, Characteristics & regulation of synchronous Generator: Principle of operation, 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. 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 polealternators.

UNIT-IV

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 powerinput.

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, PMDC and Reluctance Motor. (Qualitative Treatment only)

TEXT BOOKS:

1. Electrical Machines – by P.S. Bimbra, KhannaPublishers.
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,

1. Construction operation characteristics of synchronousmachines
2. Regulation of synchronousGenerator
3. Parallel-operation of Synchronous generators Determination of sub-transient, Transient and steady statereactance.
4. Construction operation characteristics of Synchronous motor and power circle starting methods of synchronousmotor
5. 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 machines and itsapplications.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J4215) POWER SYSTEMS-I

B.Tech. II Year II-Semester EEE

L	T	P	C
2	1	0	3

Pre requisites:
Basics of Electrical Circuits, Electrical Machines.

Course Objectives:
1. To Study the Operation of thermal, nuclear, power plantsoperation
2. To Study the Operation of Gas and Hydroelectric power plantsoperation,
3. To Design AC and DC distribution system and also Calculate voltage drop in distribution System
4. To Design Air insulated indoor/outdoor substations, and study the Voltage control and power factor improvementtechniques,
5. To Study the Economics aspects of power generation and Different types oftariff.

UNIT-I Thermal **Power Stations:**
Line diagram of Thermal Power Station (TPS) showing paths of coal, steam, water, air, ash and flue gasses. - Brief description of TPS components: Economizers, Boilers, Super heaters, Condensers, Chimney and cooling towers. Numerical Problems.
Nuclear Power Stations:
Nuclear Power Stations: Nuclear Fission and Chain reaction. - Nuclear fuels. - Principle of operation of nuclear reactor.-Reactor Components: Moderators, Control rods, Reflectors and Coolants. - Radiation hazards: Shielding and Safety precautions. - Types of Nuclear reactors and brief description of PWR, BWR and FBR. Numerical Problems.

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

UNIT-III D.C**. Distribution Systems:**
Classification of Distribution Systems.- Comparison of DC vs. AC and Under-Ground vs. Over-Head Distribution Systems.- Requirements and Design features of Distribution Systems.-Voltage Drop Calculations (Numerical Problems) in D.C Distributors for the following cases: Radial D.C Distributor fed one end and at the both the ends (equal/unequal Voltages) and Ring Main Distributor.
A.C. Distribution Systems:
Voltage Drop Calculations (Numerical Problems) in A.C. Distributors for the following cases: Power Factors referred to receiving end voltage and with respect to respective load voltages.

UNIT-IV Substations, Power Factor Control and Voltage Control:

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

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

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

UNIT-V Economic Aspects of PowerGeneration:

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

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

TEXT BOOKS:

1. Generation, Distribution and Utilization of electrical energy by C.L.Wadhwa, New age InternationalPublishers.
2. Elements of Electrical Power Station Design, 3rd Edition, Wheeler. Pub.1998-M.V.Deshpande.
3. Power System Engineering- by R.K.RJput 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 Delhi2004.
2. Electrical Power Generation, Transmission and Distribution by S.N.Singh., PHI,2003.
3. Hand book of Switchgear (BHEL) Tata Mc-Graw Hill Publication2009.

Course Outcomes: After going through this course the student gets Knowledge on

1. Thermal, nuclear, power plants operation
2. Gas and Hydroelectric power plantsoperation,
3. AC and DC distribution, voltage dropcalculations
4. Air insulated indoor/outdoor substations, operation. Voltage control and power factor improvementtechniques,
5. Economic aspects of power generation and Different types oftariff

With which he/she can be able to apply the above conceptual things to real-world electrical power generation.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCEINCES

(UGC-AUTONOMOUS)

(J4414) ICAPPLICATIONS

B.Tech IIYearII-Sem:EEE **L T P C**

3 0 0 3

Course Objectives:

The main objectives of the course are:

1. To Study the basic building blocks of Linear integratedcircuits.
2. To Study the applications of Operationalamplifiers.
3. To Study the Timers and Phase LockedLoops.
4. To Study the theory of ADC andDAC.
5. To understand the working of basic digital Integrated Circuits.

UNIT I:

INTEGRATED CIRCUITS: Introduction, Classification of Integrated Circuits, Fabrication Techniques of ICs

INTRODUCTION TO OP-AMP: Introduction, Internal blocks of Op-Amp, Ideal and Practical Op-Amp, Op-amp characteristics-DC and AC Characteristics.741 Op-Amp and its Features, Modes of operation- inverting, non-inverting.

UNIT II:

APPLICATIONS OF OP-AMPS:

Basic Applications- Summing Ampifier, Instrumentation Amplifier, AC Amplifier, V to I and I to V Converters, Sample & Hold Circuits, Differentiators and Integrators.

Comparators and waveform Generators- Comparators, Schmitt Trigger & its applications Multivibrators (Monostable and Astable).

UNIT III:

ACTIVE FILTERS

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

TIMERS & PHASE LOCKED LOOPS

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

UNIT IV:

D-A AND A- D CONVERTERS

Introduction, Basic DAC Techniques- Weighted Resistor Type. R-2R Ladder Type, inverted R-2R Type and IC 1408 DAC.

Different types of ADCs - Parallel Comparator Type, Counter Type, Successive Approximation Register Type and Dual Slope Type DAC and ADCSpecifications.

UNIT-V:

Digital ICs: Classifications, Standard TTL NAND Gate-Analysis & Characteristics, TTL Open Collector Outputs. Tristate TTL, MOS & CMOS open drain and tristate outputs.

Comparison of Various Logic Families. IC interfacing- TTL driving CMOS & CMOS driving TTL.

TEXT BOOKS:

1. Linear Integrated Circuits -D. Roy Chowdhury, New Age International (p)Ltd.

2. Op-Amps & Linear ICs - Ramakanth A. Gayakwad.

REFERENCE BOOKS:

1. Op-Amps and Linear Integrated Circuits, R.F. Coughlin & Fredrick F. Driscoll,PHI.

2. Operational Amplifiers and Liner Integrated Circuits: theory & applications, Denton J. Daibey,TMH

3. Design with operational amplifiers &Analog Integrated Circuits, Serigo Franco.McGraw Hill.

4. Digital Fundamentals - Floyd and Jain, PearsonEducation.

Course Outcomes:

After completion of this course, students will have

1. A thorough understanding of Operational amplifiers with Linear Integrated Circuits.
2. Understanding of the Different families of Digital Integrated Circuits and their characteristics.
3. Also student will able to design circuits using Operational amplifiers for various applications such Timers andFilters.
4. Understands ADC & DAC along with types for Real worldproblems
5. Learned the concepts on Digital ICs for VLSI Technology andDesign

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J4216) ELETRICAL MEASUREMENTS & INSTRUMENTATION

B.Tech. IIYearII-Sem:EEE

L	T	P	C
2	1	0	3

Pre requisites: To learn this course student should have the concepts on the following subjects: Mathematics-I, Electrical Circuits-I & II, Engineering Physics

Course Objectives:

1. To Study the basic principles of all measuringinstruments.
2. To Calibrate the unknown resistance, current, and voltage usingpotentiometer.
3. To deal with the measurement of voltage, current, Power factor, power, energyand magneticmeasurements
4. To deal with the measurement of RLC parameters using AC and DCBridge
5. To Study the different types of Transducers & Oscilloscopesmeasurements.

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 chargemethod.

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& Oscilloscopes:

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.

CRO: Cathode ray Oscilloscope-Cathode ray tube –time base generator-horizontal and vertical amplifiers-CRO probes-applications of CRO-Measurement of phase and frequency-lissJous patterns

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. RJput, 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, WheelerPublishing.

Course Outcomes:

After going through this student gets knowledge on:

1. Different types of measuring instruments their construction operation andcharacteristics
2. Resistance, voltage and current measurements through potentiometers, voltage & current measurements through instrumentstransformers.
3. Power and energy measurements through watt and energy meters,
4. Resistance measurements through DC bridges. Capacitance and inductance measurements through ACbridges.
5. Measurement of frequency and phase through CRO, range extension of measuring instruments and different types of errors & their reduction methods in measuring instruments.Overall improve the employability

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J4214)ELECTRICAL MACHINES – II LAB

B.Tech. IIYearII-Semester:EEE

L	T	P	C
0	0	3	1.5

The Following experiments are required to be conducted as compulsoryexperiments:

1. OC &SC tests on single phasetransformer.
2. Sumpner's test on a pair of single phasetransformers.
3. Brake test on three phase inductionmotor.
4. No load & blocked rotor tests on three phase inductionmotor.
5. Regulation of three phase alternator by synchronous impedance and m.m.fmethods.
6. Load test on Single phaseTransformer.
7. Equivalent circuit of a single phase inductionmotor.
8. Determination of Xd & Xq of a salient pole synchronousmachine.

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

1. Parallel Operation of single phasetransformers.
2. Separation of core losses of a single phasetransformer.
3. Scott connection oftransformers.
4. Regulation of three-phase alternator by Z.P.F. and A.S.A methods.
5. Efficiency of a three phasealternator.
6. Heat run test on a bank of 3Nos.of Single phase Delta Connectedtransformers.
7. Measurement of sequence impedance of a three phasealternator.
9. 'V' & inverted 'V' curves of a three phase synchronous motor.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(UGC-AUTONOMOUS)

II B.Tech. II -Sem :EEE **L T P C**
0 0 3 1.5

(J4420) IC Applications LAB

Part - I: Linear IC Experiments

1. OP AMP Applications – Adder, Subtractor,Comparators.
2. Integrator and Differentiator Circuits using IC741.
3. Active Filter Applications – LPF, HPF (firstorder)
4. IC 741 Waveform Generators - Sine, Square wave and Triangularwaves.
5. IC 555 Timer - Monostable and Astable MultivibratorCircuits.
6. Schmitt Trigger Circuits - Using IC741
7. IC 565 - PLLApplications.
8. Voltage Regulator using IC 723, Three Terminal Voltage Regulators - 7805, 7809,7912.

EQUIPMENT REQUIRED:

1. 20 MHz Cathode RayOscilloscope.
2. 1 MHz Function Generator (Sine, Square, Triangular andTTL).
3. Bus Connection to all thetables
4. Regulated Power supply-1No
5. Fixed 5V DC Power supply –1No.
6. Multimeter / VoltMeter.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J4217) ELECTRICAL MEASUREMENTS & INSTRUMENTATION LAB

B.Tech. IIYearII-Semester:EEE	L	T	P	C
	0	0	3	1.5

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

1. Calibration and Testing of single phase energyMeter.
2. Calibration of dynamometer power factormeter.
3. Crompton D.C. Potentiometer – Calibration of PMMC ammeter and PMMCvoltmeter.
4. Kelvin's double Bridge – Measurement of resistance – Determination ofTolerance.
5. Dielectric oil testing using H.T. testingKit.
6. Schering bridge & Andersonbridge.
7. Measurement of 3-Phase reactive power with single-phase wattmeter.
8. Measurement of parameters of a choke coil using 3-voltmeter an 3-ammetermethods.

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

9. Calibration LPF wattmeter – by Phantomtesting.
10. Measurement of 3-phase power with single watt meter and 2 No's ofC.T.
11. P.T. testing by comparison – V.G. as Null detector – Measurement of % ratio error and phase angle of the givenP.T.
12. LVDT and Capacitive pickup-Characteristics andcalibration
13. Resistance strain gauge – strain measurements and Calibration.
14. Transformer turns ratio measurement using a.c.bridge.
15. Measurement of % ratio error and phase angle of given C.T. bycomparison.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(JMC02) Gender Sensitization

B.Tech. II Year II Semester:AllBranches	**L**	**T**	**P**	**C2**
		0	**0**	**0**

Course Objectives:

1. To develop students' sensibility with regard to issues of gender incontemporary India.
2. To provide a critical perspective on the socialization of men andwomen.
3. To introduce students to information about some key biological aspects ofgenders.
4. To expose the students to debates on the politics and economics ofwork.
5. To help students reflect critically on genderviolence.
6. To expose students to more egalitarian interactions between men andwomen.

UNIT – I UNDERSTANDING GENDER:

Gender: Why Should We Study It? (Towards a World of Equals: Unit -1) Socialization: Making Women, Making Men (Towards a World of Equals: Unit -2) Introduction. Preparing for Womanhood. Growing up Male. First lessons in Caste. Different Masculinities.

UNIT – II GENDER AND BIOLOGY Missing Women:

Sex Selection and Its Consequences (Towards a World of Equals: Unit-4) Declining Sex Ratio. Demographic Consequences. Gender Spectrum: Beyond the Binary (Towards a World of Equals: Unit -10) Two or Many? Struggles with Discrimination.

UNIT – III GENDER AND LABOUR Housework:

the Invisible Labour (Towards a World of Equals: Unit -3) "My Mother doesn't Work." "Share the Load." Women's Work: Its Politics and Economics (Towards a World of Equals: Unit -7) Fact and Fiction. Unrecognized and Unaccounted work. Additional Reading: Wages and Conditions of Work.

UNIT – IV ISSUES OF VIOLENCE Sexual Harassment:

Say No! (Towards a World of Equals: Unit -6) Sexual Harassment, not Eve-teasing- Coping with Everyday Harassment- Further Reading: "Chupulu". Domestic Violence: Speaking Out (Towards a World of Equals: Unit -8) Is Home a Safe Place? -When Women Unite[Film]. Rebuilding Lives. Additional Reading: New Forums for Justice. Thinking about Sexual Violence (Towards a World of Equals: Unit -11) Blaming the Victim-"I Fought for my Life…." – Additional Reading: The Caste Face of Violence.

UNIT – V GENDER : CO – EXISTENCE Just Relationships:
Being Together as Equals (Towards a World of Equals: Unit -12) Mary Kom and Onler. Love and Acid just do not Mix. Love Letters. Mothers and Fathers. Additional Reading: Rosa Parks- The Brave Heart.

Prescribed Textbook : All the five Units in the Textbook, "Towards a World of Equals: A Bilingual Textbook on Gender" written by A.Suneetha, Uma Bhrugubanda, Duggirala Vasanta, Rama Melkote, Vasudha Nagaraj, Asma Rasheed, Gogu Shyamala, Deepa Sreenivas and Susie Tharu and published by Telugu Akademi, Hyderabad,Telangana State in the year 2015.

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

REFERENCE BOOKS:

- Menon, Nivedita. Seeing like a Feminist. New Delhi: Zubaan-Penguin Books,2012
- Abdulali Sohaila. "I Fought For My Life…and Won."Available onlineat:
- http://www.thealternative.in/lifestyle/i-fought-for-my-lifeand-won-sohaila-abdulal/

Course Outcomes:

1. Students will have developed a better understanding of important issues related togender in contemporary India.
2. 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 andfilm.
3. Students will attain a finer grasp of how gender discrimination works in our societyand how to counterit.
4. Students will acquire insight into the gendered division of labour and its relation to politics andeconomics.
5. Men and women students and professionals will be better equipped to work and live together asequals.
6. Students will develop a sense of appreciation of women in all walks oflife.
7. 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 genderviolence.

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B.TECH

III YEAR
I & II SEMESTER
SYLLABUS

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J5218) POWER SYSTEMS-II

B.Tech. III YearI-SemesterEEE **L T P C2 1 0 3**

Pre-requisites: To learn this course students should have the concepts on the followingsubjects: Power Systems-I, ElectricalCircuits-I

Course Objective:

1. To compute inductance and capacitance of different transmissionlines.
2. To understand performance of short, medium and long transmissionlines.
3. To examine the traveling wave performance and sag of transmissionlines.
4. To design insulators for over head lines and Calculatesag
5. To understand cables for Underground power transmissionSystem.

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 (numericalproblems).

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.RJput Laxmi Publications(P) Limited, New Delhi 2006.
4. Power System Analysis by Grainger and Stevenson, Tata McGrawHill.

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

1. On calculation of transmission lineparameters,
2. analysis of short, medium, long length transmission lines.
3. the factors affecting the performance of transmission lines, transients in transmissionlines.
4. Operation of different types of overhead line insulators, sag and tension calculation of transmissionlines.
5. On calculation of underground cables for power transmission as well for distribution. With this subject which he/she can be able to apply the above conceptual things to real-world electrical systems and itsapplications.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J5219)CONTROL SYSTEMS

B.Tech. IIIYearI-Sem:EEE

L	T	P	C
2	1	0	3

Pre- Requisites: To learn this course students should have the concepts on the following subjects: Electrical Circuits-I, Electrical Circuits-II, Electrical Machines

Course Objective:

1. The students the principles and applications of control systems in everyday life, and The basic concepts of block diagramreduction
2. To assess the system performance using time domain analysis and methods for improving it
3. Time domain analysis solutions to time invariant systems. And different aspects of stability analysis of systems in timedomain.
4. Deals with the different aspects of stability analysis of systems in frequencydomain
5. Concept on multi input and multi outputsystems.

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 integralsystems.

UNIT –III 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.

UNIT-IV STABILITY ANALYSIS IN FREQUENCY DOMAIN:
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.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.

UNIT –V 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

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 andsons.
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 – Johnwiley
3. Control Systems by S.Kesavan, HitechPublications.
4. “Modeling&ControlofDynamicSystems”byNarcisoF.Macia George J. Thaler, Thomson Publishers.
5. Solutions and Problems of Control Systems by A.K.Jairath, CBSPublictions,1992.

Course Outcomes:

After going through this course, the student gets knowledge on

1. Open loop and closed loop systems, concept of feedback in control systems, mathematical modeling and transfer function derivations of translational and rotational systems and transfer functions of servomotors and concepts ofsynchros.
2. Transfer function representation through block diagram algebra and signal flowgraphs,
3. Time response analysis of different ordered systems through their characteristic equation and time-domainspecifications.
4. Stability analysis of control systems in s-domain through R-H criteria and root-locus techniques.
5. Frequency response analysis through bodediagrams.

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

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J5221) POWER ELECTRONICS

B.Tech. III YearI-Sem EEE

L	T	P	C
2	1	0	3

Pre requisites: To learn this course student should have the concepts on the following subjects: Electrical Circuits-I & II, Electronic Devices and Circuits

Course Objective:

1. To study the Characteristics Power Semi Conductor Devices and Commutation Circuits
2. To study and design the Single phase Half wave and Full wave ControlledConverter
3. To study the Three phase converters with R and RL load and RLEloads
4. To study the Operational Characteristics of AC Voltage Controllers And Cyclo Converters
5. To study the operation of Choppers andInverters

UNIT – I: Power Semi Conductor Devices and Commutation Circuits

Thyristors – 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 Wave Controlled Converters

Phase control technique – Single phase Line commutated converters – Half wave controlled converters with Resistive, RL load and RLE load– Derivation of average load voltage and current -Active and Reactive power inputs to the converters without and with Freewheeling Diode –Numericalproblems

Single Phase Fully Controlled Converters

Fully controlled converters, Midpoint and Bridge connections with Resistive, RL loads and RLE 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, RL load voltage and current with R and RL load and RLE loads – Semi Converters, Effect of Source inductance–Dual converters Waveforms –NumericalProblems.

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 , Numericalproblems.

Cyclo Converters: Single phase midpoint cyclo converters with resistive and inductive loads, Bridge Configuration of cyclo converters- Waveforms.

UNIT – V: Choppers & Inverters

Choppers – 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,D.C Jones Chopper,AC Chopper ,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 ", Khannapublications.
2. M. H. Rashid, Power Electronics : Circuits, Devices and Applications,– Prentice Hall of India, 2^{nd} 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 UniversityPress.
3. Power Electronics, M. S. Jamil Asghar, PHI PrivateLimited.
4. Power Electronics, P.C.Sen,Tata Mc Graw-HillPublishing.

Course Outcomes:

At the end of the course, the students get a thorough knowledge on,

1. Characteristics of different types of power semiconductordevices.
2. Analyze single Phase Half wave and full wave controlledconverters.
3. Analyze the Three Phase Line CommutatedConverters
4. Analyze the AC voltage controllers and Cycloconverters.
5. Analyze and improve the employability in electrical industry DC –DC Choppers and analyze DC-ACInverters.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(UGC-AUTONOMOUS)

PROFESSIONAL ELECTIVE-I

(J5223)RENEWABLE ENERGY SOURCES

B.Tech. IIIYearI-Semester:EEE **L T P C**

3 0 0 3

Pre-requisites: To learn this course student should have the concepts on the following subjects: Engineering Physics & Chemistry

Course Objectives: To make the student

1. Introduce to the technology of renewable sources ofenergy
2. Learn about the solar radiation, its applications and radiation measuringinstruments
3. Learn about the various types of geothermal resources and itsapplications
4. Study the biomass energy resources , bio-masssystems
5. Learn the methods of energy extraction from the wind and oceans and learn to the technology of direct energy conversionmethods

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 and applications. MHD generators, principles and applications. Fuel cells, principles, and applications.

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 resourcesand 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

1. Apply the technology to capture the energy from the renewable sources likesun, wind, ocean, biomass,geothermal.
2. Use different renewable energy sources to produce electricalpower.
3. Minimize the use of conventional energy sources to produce electricalenergy.
4. Identify the fact that the conventional energy resources aredepleted.
5. Identify the Direct EnergyConversion.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(UGC-AUTONOMOUS)

PROFESSIONAL ELECTIVE-I

(J5224)ENERGY STORAGE SYSTEMS

B.Tech. III YearI-Semester:EEE **L T P C**

3 0 0 3

Pre-requisites: To learn this course student should have the concepts on the following subjects: Engineering Physics & Chemistry

Course Objectives:

1. Introduce to the technology of energy storagesystems
2. Learn about the characteristics of electricity and need of ESS in variousapplications
3. Learn about the various types and features of ESS
4. Learn about the practical applications ofESS
5. Learn about the New trends in applications ,Renewable energy generation, SmartGrid

UNIT-I ELECTRICAL ENERGY STORAGETECHNOLOGIES

Characteristics of electricity, Electricity and the roles of EES, High generation cost during peak-demand periods, Need for continuous and flexible supply, Long distance between generation and consumption, Congestion in power grids, Transmission by cable.

UNIT-II NEEDS FOR ELECTRICAL ENERGYSTORAGE

Emerging needs for EES, More renewable energy, less fossil fuel , Smart Grid uses, The roles of electrical energy storage technologies, The roles from the viewpoint of a utility, The roles from the viewpoint of consumers, The roles from the viewpoint of generators of renewable energy.

UNIT-III FEATURES OF ENERGY STORAGESYSTEMS

Classification of EES systems , Mechanical storage systems, Pumped hydro storage (PHS), Compressed air energy storage (CAES), Flywheel energy storage (FES),Electrochemical storage systems , Secondary batteries , Flow batteries, Chemical energy storage , Hydrogen (H_2),Synthetic natural gas (SNG).

UNIT-IV TYPES OF ELECTRICAL ENERGY STORAGESYSTEMS

Electrical storage systems, Double-layer capacitors (DLC) ,Superconducting magnetic energy storage (SMES),Thermal storage systems ,Standards for EES, Technical comparison of EES technologies.

UNIT-V APPLICATIONS

Present status of applications, Utility use (conventional power generation, grid operation & service) , Consumer use (uninterruptable power supply for large consumers), New trends in applications ,Renewable energy generation, Smart Grid, Smart Micro grid, Smart House, Electric vehicles, Management and control hierarchy of storage systems, Internal configuration of battery storage systems, External connection of EES systems , Aggregating EES systems and distributed generation (Virtual Power Plant), Battery SCADA– aggregation of many dispersed batter

TEXT BOOKS

1. Thyristor control of Electric Drives - VedamSubranmanyam.
2. Analysis of electric machinery and Drives systems - Paul C. Krause, Oleg wasynezuk,Scott D. Sudhoff.
3. Electrical Energy Storage Systems-ICE whitepapers.

REFERENCES

1. T. B. Atwater and Arthur Dobley, *Metal/Air batteries*, Lindens Handbook of Batteries, 2011, ISBN978-0-07-162421-X.
2. D. Jähnig, et al.: *Thermo-chemical storage for solar space heating in a single-family house*, 10th International Conference on Thermal Energy Storage: Ecostock 2006,31 May - 2 June 2006, New Jersey,USA.
3. Shin-ichi INAGE: *Prospective on the Decarbonised Power Grid,* IEC/MSB/EES Workshop, Germany, 31 May - 1 June 2011.
4. P. Wolfrum, F. Steinke, C. Hoffmann: *EES Requirements for a renewableEurope,* Presentation,IEC Workshop EES, Freiburg, 31 May 2011.

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

1. Apply the technology to have energy storage system for electricalLoads
2. To save the electrical power in peak time loads usingESS
3. To store energy and to avoid the environmentalpollution
4. Design different types of Electrical storagesystems,
5. Adopt the new trends in applications of Renewable energy generation and SmartGrid.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(UGC-AUTONOMOUS)

PROFESSIONAL ELECTIVE-I

(J5225)SPECIAL ELECTRICAL MACHINES

B.Tech. IIIYearI-Semester:EEE	**L T P C**
	3 0 0 3

Course Objectives:

1. Construction, principle of operation, control and performance of steppingmotors.
2. Construction, principle of operation, control and performance of switched reluctance motors.
3. Construction, principle of operation, control and performance of permanent magnet brushless D.C.motors.
4. Construction, principle of operation and performance of permanent magnet synchronous motors.
5. Construction, principle of operation and performance of other specialMachines.

UNIT I

STEPPER MOTORS

Constructional features–Principle of operation–Types–Torque predictions–Linear Analysis–Characteristics–Drive circuits–Closed loop control–Concept of lead angle-Applications.

UNIT II

SWITCHED RELUCTANCE MOTORS (SRM)

Constructional features–Principle of operation-Torque prediction–Characteristics Steady state performance prediction–Analytical Method–Power controllers–Control of SRM drive-Sensor less operation ofSRM–Applications.

UNIT III

PERMANENT MAGNET BRUSHLESS D.C. MOTORS

Fundamentals of Permanent Magnets-Types-Principle of operation-Magnetic circuit analysis-EMF and Torque equations-Power Converter Circuits and their controllers-Characteristics and control-Applications.

UNIT IV

PERMANENT MAGNET SYNCHRONOUS MOTORS (PMSM)

Constructional features-Principle of operation–EMF and Torque equations-Sine wave motor with practical windings-Phasor diagram-Power controllers–performance characteristics-Digital controllers–Applications.

UNIT V

OTHER SPECIAL MACHINES

Constructional features–Principle of operation and Characteristics of Hysteresis motor-Synchronous Reluctance Motor–Linear Induction motor-Repulsion motor-Application.

TEXT BOOKS:

1. K.Venkataratnam, 'Special Electrical Machines', Universities Press (India) Private Limited, 2008.
2. T. Kenjo, 'Stepping Motors and Their Microprocessor Controls', Clarendon Press London, 1984
3. E.G. Janardanan, 'Special electrical machines', PHI learning Private Limited, Delhi, 2014.

REFERENCES:

1. R.Krishnan, 'Switched Reluctance Motor Drives Modeling, Simulation, Analysis, Design and Application', CRC Press, New York,2001.
2. T. Kenjo and S. Nagamori, 'Permanent Magnet and Brushless DC Motors', Clarendon Press, London,1988.
3. T.J.E.Miller,'Brushless Permanent-Magnet and Reluctance Motor Drives', Oxford University Press,1989.
4. R.Srinivasan, 'Special Electrical Machines', Lakshmi Publications,2013

COURSE OUTCOMES:

Ability to acquire the knowledge on construction and operation of stepper motor.

1. Ability to construction, principle of operation, switched reluctancemotors.
2. Ability to acquire the knowledge on construction and operation of permanent magnet brushless D.C.motors.
3. Ability to acquire the knowledge on construction and operation of permanent magnet synchronousmotors.
4. Ability to select a special Machine for a particular application.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J5222) POWER ELECTRONICSLAB

B.Tech. IIIYearI-Semester:EEE	**L**	**T**	**P**	**C**
	0	**0**	**3**	**1.5**

Any Ten of the Experiments From the following List:

1. Study of Characteristics of SCR, MOSFET & IGBT
2. Gate firing circuits forSCR's
3. Single Phase AC Voltage Controller with R and RLLoads
4. Single Phase fully controlled bridge converter with R and RLloads
5. Forced Commutation circuits (Class A, Class B, Class C, Class D & ClassE)
6. DC Jones chopper with R and RLloads.
7. Single phase parallel, inverter with R and RLload.
8. Single Phase Cycloconverter with R and RLloads
9. Single Phase half controlled converter with Rload
10. Three Phase half controlled bridge converter withR-load
11. Single phase series, inverter with R and RLload
12. Single Phase Mc-Murray Bridge converter with R and RLloads
13. Single phase dual converter with RLloads.
14. Operation of MOSFET basedchopper.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J5220)CONTROL SYSTEMS LAB

B.Tech. IIIYearI-Semester:EEE	**L**	**T**	**P**	**C**
	0	**0**	**3**	**1.5**

Any Ten of the following experiments are to be conducted:

1. Time response of Second ordersystem
2. Characteristics ofSynchros
3. Programmable logic controller – Study and verification of truth tables of logic gates, simple Boolean expressions and application of speed control ofmotor.
4. Effect of feedback on DC servomotor
5. Transfer function of DC motor
6. Effect of P, PD, PI, PID Controller on a second ordersystems
7. Lag and lead compensation – Magnitude and phase plot
8. Transfer function of DC generator
9. Temperature controller usingPID
10. Characteristics of magneticamplifiers
11. Characteristics of AC servomotor

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(JMC03) CONSTITUTION OF INDIA

B.Tech. III YearI-Semester:EEE

	L	T	P
C3	0	0	0

Course Objectives:

1. The Constitution is the basic and fundamentallaw
2. To introduce concepts and salient features of the constitutionIndian
3. Analyze the Preamble of the Constitution and identify the core values reflected init;
4. Appreciate the core constitutional values that permeate the salient features ofthe
5. Indian Constitution; and examine the nature of the Indian federal system and the parliamentary form of govern

Course outcome

1. It also tells us about the rights and also the duties of itscitizens.
2. They know about the role, powers of members of local sabha and rajsabha
3. It lays down the rules to govern thecountry
4. Role and function of electioncommissioner
5. Power and duties of elected represented s for panchayatraj , ZP, corporation and Importanceof democracy

Unit I

Introduction to Constitution’ meaning of the term,, Indian Constitution: Sources and constitutional history, Features: Citizenship, Preamble, Fundamental Rights and Duties, Directive Principles of StatePolicy.

Unit II

Union Government and its Administration Structure of the Indian Union: Federalism, Centre-State relationship, President: Role, power and position, PM and Council of ministers, Cabinet and Central Secretariat, Lok Sabha, Rajya Sabha

Unit III

State Government and its Administration Governor: Role and Position, CM and Council of ministers, State Secretariat: Organisation, Structure and Functions

Unit IV

Local Administration District’s Administration head: Role and Importance, Municipalities:Introduction, Mayor and role of Elected Representative, CEO of Municipal Corporation, Pachayatiraj: Introduction, PRI: Zila parishadh, Elected officials and their roles, CEO Zila parishadh: Position and role, Block level: Organizational Hierarchy (Different departments) village level: Role of Elected and Appointed officials,Importance of grass root democracy

Unit V

Election Commission Election Commission: Role and Functioning, Chief Election Commissioner and Election Commissioners, State Election Commission: Role and Functioning, Institute and Bodies for the welfare of SC/ST/OBC and women.

REFERENCES

1. Books.Recommended
2. Indian Polity' byLaxmikanth
3. Indian Administration' by SubhashKashyap
4. 'Indian Constitution' by D.D.Basu.
5. 'Indian Administration' by Avasti andAvasti

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J6226) STATIC DRIVES

B.Tech. IIIYearII-Sem:EEE

L	T	P	C
2	1	0	3

Pre-requisites:
Basics of semiconductor devices and power electronics converter,Awareness of all type of machines V-I Characteristics, torque - speed Characteristics and Speed control techniques,Control system design basics,Awareness about traction systems

Course Objectives:
1. To Analyze the operation of DC motors controlled by Single phaseconverter.
2. To study the converter control of DC motors in variousquadrants.
3. To study Control of DC, Motor drives byChoppers
4. To understand the operation of Induction Motor by AC voltagecontrollers.
5. To understand the Control of Synchronous Motors by Cyclo converters, and PWM controltechnique.

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.

UNIT – II: Four Quadrant operations of DC Drives through Dual converters:
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 – III: Control of DC motors by Choppers
Single quadrant, Two –quadrant and four quadrant chopper fed dc separately excited and series excited motors – Continues 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 –IV: 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 cyclo converters, 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)

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, VFI,CSI.

TEXT BOOKS:

1. Fundamentals of Electric Drives – by G K Dubey NarosaPublications
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 HallIndia

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. 2ndEditon.

Course Outcomes: At the end of this course, students will demonstrate the ability to

1. Explain the fundamentals of electric drive and different electric braking methods. Analyze the operation of three phase converter controlled dc motors and four quadrant operation ofdc motors using dualconverters.
2. Explain the converter control of DC motors in variousquadrants.
3. Explain the concept of speed control of induction motor by using AC voltage controllersand voltage sourceinverters.
4. Explain the principles of static rotor resistance control and various slip powerrecovery schemes.
5. Explain the speed control mechanism of synchronous motors

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J6227)SWITCH GEAR AND PROTECTION

B.Tech. III YearII-SemEEE

L	T	P	C
2	1	0	3

Prerequisites: To learn this course student should have the concepts on the following subjects: Power systems-I & II

Course Objective:

1. To introduce all kinds of circuit breakers forprotection.
2. To introduce all kinds of relays forprotection.
3. To describe overall protection of Generators, Transformers and feeder bus barsagainst faults
4. To describe neutral grounding for overallprotection
5. To understand the phenomenon of Over Voltages and it'sclassification

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 circuitbreakers.

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 – Differentialprotection.

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-Deltaand Zig-Zag)

UNIT – V PROTECTION AGAINST OVERVOLTAGES

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 – KhannaPubllishers.
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 SystemEngineering, Dhanpat Rai &Co.

Course Outcomes: At the end of this course,

1. Students are knowledgeable in the field of power system protection, and circuitbreakers.
2. Students are knowledgeable in the field of instrument transformers andrelays.
3. Students will demonstrate and ability to design the relevant protection systems for the main elements of a powersystem
4. Students are knowledgeable in the field ofswitchgear
5. Students are knowledgeable in the field of over- voltage protection and the basics ofdata transmission.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J6228) COMPUTER METHODS IN POWER SYSTEMS

B.Tech. III YearII-Sem:EEE

L	T	P	C
2	1	0	3

Pre- Requisites: To learn this course students should have the concepts on the following subjects: Power systems-II, Switch gear and protection, Mathematics-II

Course Objectives:

1. To Study the Power System NetworkMatrices
2. To understand the load flow studies
3. To Study the Per-Unit impedances and Symmetrical faultAnalysis
4. To study the various methods to improve steady statestability.
5. To Derive the Swing equation by Equal AreaCriterion

UNIT -I

Power System Network Matrices: Graph Theory: Definitions, Bus Incidence Matrix, Y_{bus} formation by Direct and Singular Transformation Methods, Numerical Problems.

Formation of Z_{Bus}: Partial network, Algorithm for the Modification of ZBus Matrix for addition element for the following cases: Addition of element from a new bus to reference, Addition of element from a new bus to an old bus, Addition of element between an old bus to reference and Addition of element between two old busses (Derivations and Numerical Problems). - Modification of ZBus for the changes in network (Problems)

UNIT-II

Power flow Studies: load Flows: Necessity of Power Flow Studies – Data for Power Flow Studies – Derivation of Static load flow equations.

Load flow solutions using Gauss Seidel Method: Acceleration Factor, Load flow solution with and without P-V buses, Algorithm and Flowchart. Numerical Load flow Solution for Simple Power Systems (Max. 3-Buses): Determination of Bus Voltages, Injected Active and Reactive Powers (Sample One Iteration only) and finding Line Flows/Losses for the given Bus Voltages. **Newton Raphson Method in Rectangular and Polar Co-Ordinates Form:** Load Flow Solution with or without PV Busses- Derivation of Jacobian Elements, Algorithm and Flowchart. **Decoupled and Fast Decoupled Methods:** Comparison of Different Methods – DC load Flow

UNIT-III

Short Circuit Analysis: **Per-Unit System of Representation:** Per-Unit equivalent reactance network of a three phase Power System, Numerical Problems.

Symmetrical fault Analysis: Short Circuit Current and MVA Calculations, Fault levels, Application of Series Reactors, Numerical Problems.
Symmetrical Component Theory: Symmetrical Component Transformation, Positive, Negative

and Zero sequence components: Voltages, Currents and Impedances. Sequence Networks: Positive, Negative and Zero sequence Networks, Numerical Problems.
Unsymmetrical Fault Analysis: LG, LL, LLG faults with and without fault impedance Numerical Problems.

UNIT-IV:
Steady State Stability Analysis: Elementary concepts of Steady State, Dynamic and Transient Stabilities. Description of: Steady State Stability Power Limit, Transfer Reactance, Synchronizing Power Coefficient, Power Angle Curve and Determination of Steady State Stability and Methods to improve steady state stability.

UNIT-V:
Transient State Stability Analysis: Derivation of Swing Equation. Determination of Transient Stability by Equal Area Criterion, Application of Equal Area Criterion, Critical Clearing Angle Calculation. - Solution of Swing Equation: Point-by-Point Method. Methods to improve Stability - Application of Auto Reclosing and Fast Operating Circuit Breakers.

TEXT BOOKS:

1. Power System Analysis-Dr.N.V.Ramana M/s Pearson Education (P)Ltd
2. Modern Power system Analysis – by I.J.Nagrath & D.P.Kothari: Tata McGraw-Hill Publishing Company, 2ndedition.

REFERENCE BOOKS:

1. Computer Techniques in Power System Analysis by M.A.Pai, TMHPublications
2. Power System Analysis by Grainger and Stevenson, Tata McGrawHill.
3. Computer techniques and models in power systems, By K.Uma rao,I.K.International
4. Power System Analysis by Hadi Saadat – TMH Edition.
5. Power System Analysis,PSR Murthy,BSPublications
6. Power system Analysis, T.K.Nagasarkar, M.S.Sukhija,Oxford UniversityPress.

Course Outcomes:

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

1. power system network matrices through graphtheory
2. power flow studies (load-flow) through various computer methods, short-circuit analysis, per-unit system ofrepresentation
3. concept of sequence impedance, symmetrical and unsymmetrical faultanalysis
4. steady-state, dynamic-state and transient- state stabilityanalysis
5. Determination of Transient Stability by Equal Area Criterion, With which he/she can able to apply the above conceptual things to real-world electrical power systems problems and applications.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

III B.Tech. IISem:EEE **L T P C**
3 0 0 3

(J6424) MICRO PROCESSORS AND MICRO CONTROLLERS

COURSE OBJECTIVES:
1. Understanding the importance of micro processors and microcontrollers
2. Understanding the application development skills by using variousinstructions
3. Understanding the interfacing of devices with processors andcontrollers
4. Understanding the development of basic Real Time OperatingSystem.
5. Understanding the advanced micro processors andcontrollers

UNIT-I
Introduction to 8085 Architecture
8086 Architecture: 8086 Architecture-Functional diagram, Register Organization, Memory Segmentation, Programming Model, Memory addresses, Physical Memory Organization, Pin Configuration of 8086.

UNIT-II
Instruction Set and Assembly Language Programming of 8086: Instruction formats, Addressing modes, Instruction Set, Assembler Directives, Macros, and Simple Programs involving Logical, Branch and Call Instructions, Sorting, String Manipulations.

UNIT -III:
I/O Interface : 8255PPI, Various modes of operation and Interfacing to 8086(Keyboard, Display, ADC & DAC).
Interrupt structure of 8086 :8259 PICU, Vector Interrupt Table, Interrupt Service Routine.
Communication Interface: Serial Communication Standards, Serial Data Transfer Schemes, 8251 USART architecture and interfacing

UNIT –IV:
Introduction to Microcontrollers: Overview of 8051 Microcontroller, Architecture, I/O Ports, Memory Organization, Addressing Modes and Instruction set of 8051.
8051 Real Time Control: Programming Timer Interrupts, Programming External Hardware Interrupts, Programming the Serial Communication Interrupts, Programming 8051 Timers and Counters

UNIT –V:
ARM Architecture: ARM Processor fundamentals, ARM Architecture – Register, CPSR, Pipeline, exceptions and interrupts interrupt vector table, ARM instruction set – Data processing, Branch instructions, load store instructions, Software interrupt instructions, Program status register instructions, loading constants, Conditional execution, Introduction to Thumb instructions.

TEXT BOOKS:

1. Micro Processor Architecture Programming and Applications with the 8085-Ramesh Goankar, 5th Edition,Penram InternationalPublishing.
2. Advanced Microprocessors and Peripherals – A. K. Ray and K.M. Bhurchandani, TMH, 2nd Edition 2006.
3. The 8051 Microcontroller, Kenneth. J. Ayala, Cengage Learning, 3rdEd.
4. ARM System Developers guide, Andrew N SLOSS, Dominic SYMES, Chris WRIGHT, Elsevier,2012

REFERENCE BOOKS:

1. Microprocessors and Interfacing, D. V. Hall, TMGH, 2nd Edition2006.
2. Introduction to Embedded Systems, Shibu K.V, TMH,2009
3. The 8051Microcontrollers, Architecture and Programming and Applications -K.Uma Rao, Andhe Pallavi, Pearson,2009.
4. ARM ReferenceManuals

Course Outcomes:

upon completion of this course :

1. The student will learn internal architecture and organization of 8085 and8086.
2. The student will learn instruction set, Addressing Modes and Assembly level language programming
3. The student understands how to interface the various I/O and Communication interface modules.
4. The student will learn the internal Architecture, Register Organization and instruction set of 8051 microcontrollers and theirinterfacing.
5. Understands advance microcontrollers and their importance in the field of Embedded systems andIOT.And improve the employability in field of electronic industry

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(UGC-AUTONOMOUS)

PROFESSIONAL ELECTIVE-II

(J6230) ELECTRICAL DISTRIBUTION SYSTEMS

B.Tech IV YearII-SemesterEEE **L T P C**

3 0 0 3

Pre- Requisites: To learn this course student should have the concepts on the following subjects: Power system-I, Switch gear and protection

Course objectives:

1. To study electrical distributionsystems,
2. To study the design of feeders, substations, and optimal location ofsubstations
3. To study conceptual knowledge on how to determine the performance of a distribution system through its important parameters i.e. voltage drops and powerlosses.
4. To Study the protection of the system by means of protective devices and their co-ordination during the several faultconditions.
5. To study voltage profiles and power factor of the system with compensationtechniques.

UNIT – I

Introduction & General Concepts: Introduction to distribution systems: Load modeling and characteristics. Coincidence factor, contribution factor loss factor – Relationship between the load factor and loss factor. Classification of loads: Residential, commercial, Agricultural and Industrial loads and their characteristics.

UNIT – II

Distribution Feeders & Substations: Design Considerations of Distribution Feeders: Radial and loop types of primary feeders, voltage levels, feeder loading; basic design practice of the secondary distribution system. Substations: Rating of distribution substation, service area within primary feeders. Benefits derived through optimal location of substations.

UNIT — III

Distribution 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 –IV

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

UNIT – V

Voltage Control & P.F Improvement: Equipment for voltage control, effect of series capacitors, line drop Compensation, effect of AVB/AVR. Power- factor control using different types of power capacitors, shunt and series capacitors, effect of shunt capacitors (Fixed and Switched), capacitor allocation – Economic justification —Procedure to determine the best capacitor location.

TEXT BOOKS:

1. Electrical Power Distribution Systems, V.KamarJu,TMH.
2. Electrical Distribution Systems, Dr. S. Siva nagarJu, Dr. K.Shankar. Danapathi Ral Publications.

REFERENCE BOOKS:

1. Electric Power Distribution System Engineering, Turan Gonen, CRCPress.
2. Electric Power Generation, Transmission and Distribution, SN. Singh, PHIPublishers.

Course Outcomes:

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

1. general aspects of electrical distributionsystems,
2. design and analysis of distribution feeders andsubstations,
3. distribution systems analysis through voltage-drop and power losscalculations,
4. operation of protective devices used in distribution systems and their co-ordination voltage control and power factor improvement through capacitorcompensation
5. Voltage Control & P.F Improvement of system. Faults analysis, with which he/she can able to apply the above conceptual things to real-world electrical power system and its applications.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(UGC-AUTONOMOUS)

PROFESSIONAL ELECTIVE-II

(J6231) ELECTRICAL ESTIMATION AND COSTING

B.Tech. III YearII-Sem:EEE	**L T P C**
	3 0 0 3

Pre-requisites: learn this course student should have the concepts on the following subjects: Power system-I, Power system-II

Course Objective:

1. To study the Indian Electricity rules, Service connections andInstallations
2. To estimate and costing of material, Electrical installations for commercial buildings Emphasize the estimating and costing aspects of all electrical equipment,installation
3. To Designs to analyze the cost viability of underground cables and overheadlines, Exposure to design and estimation ofwiring
4. To Designs to analyze the cost viability of various types of substation.
5. To Design of IlluminationSchemes.

UNIT-I

Design Considerations of Electrical Installations: Electric Supply System, Three phase four wire distribution system, Protection of Electric Installation against over load, short circuit and Earth fault, Earthing, General requirements of electrical installations, testing of installations, Indian Electricity rules, Neutral and Earth wire, Types of loads, Systems of wiring, Service connections, Service Mains, Sub-Circuits, Location of Outlets, Location of Control Switches, Location of Main Board and Distribution board, Guide lines for Installation of Fittings, Load Assessment, Permissible voltage drops and sizes of wires, estimating and costing of Electric installations.

UNIT —II

Electrical Installation for Different Types of Buildings and Small Industries: Electrical installations for residential buildings — estimating and costing of material, Electrical installations for commercial buildings, Electrical installations for smallindustries.

UNIT—III

Overhead and Underground Transmission and Distribution Lines: Introduction, Supports for transmission lines, Distribution lines — Materials used, Underground cables, Mechanical Design of overhead lines, Design of undergroundcables.

UNIT-IV

Substations: Introduction, Types of substations, Outdoor substation — Pole mounted type, Indoor substations — Floor mounted type.

UNIT-V

Design of Illumination Schemes: Introduction, Terminology in illumination, laws of illumination, various types of light sources, Practical lighting schemes.

TEXT BOOKS

1. Electrical Design Estimating and Costing, K. B. Raina, S. K. BhattAcharya, New Age InternationalPublisher.
2. Design of Electrical Installations, Er. V. K. Jam, Er. Amitabh BJJ, University Science Press.
3. Electricity Pricing Engineering Principles and Methodologies, Lawrence J. Vogt, P. E., CRCPress.

REFERENCE BOOKS

1. Code of practice for Electrical wiring installations,(System voltage not exceeding 650 volts), Indian Standard Institution, IS: 732-1983.
2. Guide for Electrical layout in residential buildings, Indian Standard Institution, IS: 4648-1968.
3. Electrical Installation buildings Indian Standard Institution, IS:2032.
4. Code of Practice for selection, Installation of Maintenance of fuse (voltage not exceeding 650V), Indian Standard Institution, IS: 3106-1966.
5. Code of Practice for earthling, Indian Standard Institution, lS:3043-1966.
6. Code of Practice for Installation and Maintenance of induction motors, Indian Standard Institution, IS:900-1965.
7. Code of Practice for electrical wiring, Installations (system voltage not exceeding 650 Volts), Indian Standard Institution, IS: 2274-1963.
8. Electrical Installation, estimating and costing, Gupta J. B., Katson,Ludhiana.

Course Outcome:

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

1. Electric Supply System Design Considerations, Indian Electricity rules, Service connections, ServiceMains
2. estimating costing aspects of all electrical equipment, installation for residential buildings and designs to analyze the costviability,
3. exposure to design and estimation of wiring, design of overhead and underground distribution lines
4. Installation and Estimation analyze of various types of substation
5. Design of Illumination Schemes, with which he/she can able to apply the above conceptual things to real-world electrical power system and itsapplications.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(UGC-AUTONOMOUS)

PROFESSIONAL ELECTIVE-II

(J6232) POWER QUALITY

B.Tech. III YearII-Sem EEE **L T P C 3 0 0 3**

Pre- Requisites: To learn this course student should have the concepts on the following subject: Power systems-II, Power system operation and control.

OBJECTIVES:

1. To study power quality in supplies of domestic and industrialapplications.
2. To study different types interruptions intransmissions
3. To study single phase and three phase supplies sags swellsCharacterization**.**
4. To study Power Quality Considerations in Industrial PowerSystems
5. To study mitigation methods**.**

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 qualitymonitoring.

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 shortinterruptions.

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.

TEXTBOOKS:

1. Math H J Bollen "Understanding Power Quality Problems", IEEEPress.
2. R.C. Dugan, M.F. McGranaghan and H.W. Beaty, "Electric Power Systems Quality." New York:McGraw-Hill.1996

REFERENCES:

1. G.T. Heydt, „Electric Power Quality", 2nd Edition. (West Lafayette, IN, Stars in aCircle Publications,1994).

2. Power Quality VAR Compensation in Power Systems, R. SastryVedamMulukutla S. Sarma,CRCPress.
3. A Ghosh, G. Ledwich, Power Quality Enhancement Using Custom Power Devices. Kluwer

Course Outcomes:

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

1. Power quality in supplies of domestic and industrialapplications.
2. Different types of Interruptions and sags and swellsapplications.
3. 1-Phase and 3-Phase Voltage SAGCharacterization
4. Power quality issues in Industrial PowerSystems.
5. Mitigation of Interruptions & Voltage Sags, current Harmonics andfrequency harmonics ofsupply.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(UGC-AUTONOMOUS)

(J6229)SIMULATION OF ELECTRICAL SYSTEMS LAB

B.Tech. III YearII-SemesterEEE	**L**	**T**	**P**	**C**
	0	**0**	**3**	**1.5**

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

1. PSPICEsimulationoftransientresponseofRLCcircuits.
   a) ResponsetoPulseinput
   b) Responsetostepinput
   c) Responsetosinusoidalinput
2. PSPICEsimulationofsingle-phasefullconverterusingRLEloadsandsingle-phaseACvoltage controllerusingRL&Eloads.
3. PSPICEsimulationofresonantpulsecommutationcircuitandBuckchopper.
4. PSPICEsimulationofsinglephaseInverterwithPWMcontrol
5. PSPICEsimulationofOp-AmpbasedintegratorandDifferentiatorcircuits.
6. Linearsystemanalysis(Timedomainanalysis,Erroranalysis)usingMATLAB
7. Stabilityanalysis(Bode,RootLocus,Nyquist)ofLinearTimeInvariantSystemUsingMATLAB
8. StateSpacemodelforclassicaltransferfunctionusingMATLAB-verification

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

1. TransferfunctionanalysisofDCcircuitusingPSPICE.
2. ModelingatransformerandsimulationoflosstransmissionlineinPSPICE.
3. Short circuitstudies.
4. PowerflowsolutionandTransientstabilityevaluationofPowersystem.

Reference Books/Software:

1. PSPICEforcircuitsandelectronicsusingPSPICE–M.H.Rashid,M/s.PHIPublications.

2. PSPICEA/Duser'smanual–MICROSIM,USA.

3. PSPICEreferenceguide–MICROSIM,USA.

4. MATLABuser'smanual–Mathworks,USA.

5. MATLAB–ControlSystemtoolbox–Mathworks,USA.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J6430) MICRO PROCESSORS AND MICRO CONTROLLERS LAB

III B.Tech.IISem:EEE **L T PC**
0 0 3 1.5

Cycle 1: Using 8086 Processor Kits and/or Assembler (10 Weeks)

1. Write and execute an Assembly language Program (ALP) to 8086 processor to add, subtract andmultiplication.
2. Write and execute an Assembly language Program (ALP) to 8086 processor to divide a 32 bit unsignedNumber.
3. Write and execute an Assembly language Program (ALP) to 8086 processor to sort the given array ofNumbers.
4. Write and execute an Assembly language Program (ALP) to 8086 processor to Bit level Logical Operations, Rotate, Shift, Swap and BranchOperations.
5. Write and execute an Assembly language Program (ALP) to 8086 processor to pick the median from the givenString.
6. Write and execute an Assembly language Program (ALP) to 8086 processor to find the length of a givenstring.
7. Write and execute an Assembly language Program (ALP) to 8086 processor to reverse the givenstring.
8. Write and execute an Assembly language Program (ALP) to 8086 processor to verify thepassword.
9. Write and execute an Assembly language Program (ALP) to 8086 processor to insert or delete acharacter?
10. Write and execute an Assembly language Program (ALP) to 8086 processor to call a delay subroutine and display the character on the LEDdisplay.
11. Interface a keypad to 8086 microprocessor and display the key number pressed on the 7- segment display which is also interfaced to8086.
12. Write an interrupt service routine to 8086 whenever there is an interrupt request on interrupt pin, which displays "hello" on aLCD.
13. Interface an 8086 microprocessor trainer kit to PC and establish a communication between them through RS232.
14. Interface DMA controller to 8086 and transfer bulk data from memory to I/Odevice.
15. Interface a stepper motor to 8086 and operate it in clockwise and anti-clock wise by choosing variablestep-size.
16. Interface an 8 bit ADC to 8086 and generate digital output and store it in memory for the given square/ ramp/ triangle wave forminputs.

Cycle 2: Using 8051 Microcontroller Kit (6 weeks)

Introduction to Keil IDE

1. Assembly Language Programs to Perform Arithmetic (Both Signed and Unsigned) 16 Bit Data Operations, Logical Operations (Byte and Bit Level Operations), Rotate, Shift, Swap and BranchInstructions
2. Time delay Generation Using Timers of8051.
3. Serial Communication from / to 8051 to / from I/Odevices.
4. Program Using Interrupts to Generate Square Wave 10 KHZ Frequency on P2.1 Using Timer0 8051 in 8bit Auto reload Mode and Connect a 1HZ Pulse to INT1 pin and Display on Port0.Assume Crystal Frequency as11.0592MHZ

Equipment Required:

1.8086 Microprocessor Trainer Kits
2.8051 Microcontroller Trainer Kits
3. Interfacing Modules : ADC,DAC,Temparature Controllersetc.
4. Interfacing Cards : 8255, 8529,8257.

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B.TECH

IV YEAR
I & II SEMESTER
SYLLABUS

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(UGC-AUTONOMOUS)

(J7233)POWER SYSTEM OPERATION & CONTROL

B.Tech IV YearI-Semester:EEE **L T P C**

2 1 0 3

Pre- Requisites: To learn this course student should have the concepts on the following subjects: Power system-I & Control systems

Course Objective:

1. To study the Economic operation of PowerSystems,
2. To study the Hydro and thermalscheduling
3. To study the Modeling of turbines, generators and automatic controllers. Itemphasizes on singlearea
4. To study the Two area load frequency control
5. To study the reactive powercontrol.

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, Optimum generation allocation with line losses neglected. Optimum generation allocation including the effect of transmission line losses – Loss Coefficients, General transmission line loss formula.

UNIT – II
Hydrothermal Scheduling

Optimal scheduling of Hydrothermal System: Hydroelectric power plant models, scheduling problems-Short term hydrothermal scheduling problem.

UNIT –III

Modeling of Turbine: First order Turbine model, Block Diagram representation of Steam Turbines and Approximate Linear Models.
Modeling of Generator (Steady State and Transient Models): Description of Simplified Network Model of a Synchronous Machine (Classical Model), Description of Swing Equation (No Derivation) and State-Space II-Order Mathematical Model of Synchronous Machine.
Modeling of Governor: Mathematical Modeling of Speed Governing System – Derivation of small signal transfer function.
Modeling of Excitation System: Fundamental Characteristics of an Excitation system, Transfer function, Block Diagram Representation of IEEE Type-1 Model

UNIT – IV

Single Area & Two-Area Load Frequency Control: 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 – Uncontrolled case.

Load Frequency Control of Two-Area: Load frequency control of 2-area system – uncontrolled case and controlled case, tie-line bias control

Load Frequency Controllers: Proportional plus Integral control of single area and its block diagram representation, steady state response – Load Frequency Control and Economic dispatch control.

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.

TEXT BOOKS:

1. Power Systems Analysis by C.L.Wadhwa, Newage International-3rdEdition
2. Modern Power System Analysis – by I.J.Nagrath & D.P.Kothari Tata M Graw – Hill Publishing Company Ltd, 2nd edition.

REFERENCE BOOKS:

1. Power System Analysis and Design by J.Duncan Glover and M.S.Sarma.,THOMPSON, 3rdEdition.
2. Power System stability and control,Prabha kundur,The McGraw-Hillcompanies
3. Electric Energy systems Theory – by O.I.Elgerd, Tata Mc Graw-hill Publishing Company Ltd., Secondedition.
4. Power System Analysis by Grainger and Stevenson, Tata McGrawHill.
5. Power System Analysis by Hadi Saadat – TMHEdition.

Course Outcomes:

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

1. Economic operation of powersystems,
2. Scheduling of hydro-thermal powerplants,
3. modeling of the power system components like turbine, generator, governor and Excitationsystems
4. necessity of keeping the frequency of the power system constant , load frequency control in single and two area systems, operation of load frequencycontrollers,
5. reactive power control, uncompensated transmission line Compensation in transmission systems.improve the employability in field of power generations

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(UGC-AUTONOMOUS)

(J7235)UTILIZATION OF ELECTRICAL ENERGY

B.Tech. IV YearI-Sem EEE	**L**	**T**	**P**	**C**
	2	**1**	**0**	**3**

Pre-requisites: learn this course student should have the concepts on the following subjects: Power Electronics, Electrical Machines –I & II

Course Objectives:

1. To Study The types of Electricdrives
2. To Study the various types of electric heating and welding.
3. To Study the fundamentals of illumination andits.
4. To understand the operation of electrical tractionsystems.
5. To calculate tractive effort, power, specific energy consumption in electrical traction systems.
6.

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 & WELDING

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 Universitypress.
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: At the end of this course, students will have

1. Knowledge of drives with real worldproblems.
2. An ability to function effectively in industry related todrives.
3. Ability to work in industry related tolightening
4. Ability to apply the technical knowledge in electrictraction
5. Ability to work in electric traction and application involved in motioncontrol.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

PROFESSIONAL ELECTIVE-III

(J7236) HIGH VOLTAGE ENGINEERING

B.Tech. IV YearI-Sem EEE

L	T	P	C
3	0	0	3

Pre- Requisites: To learn this course students should have the concepts on the following subjects: Electrical Measurements& power Systems-II

Course Objectives:

1. To study the detailed analysis of Electric field stresses in various insulatingmaterials
2. To study the detailed analysis of Breakdown occurring in gaseous,liquids
3. To study Solid dielectrics, information about generation and measurement of High voltage andcurrent.
4. To study the Lightning phenomenon, over Voltage surges,& systemsfaults.
5. To Study the High voltage testingmethods.

UNIT- I

Introduction to High Voltage Engineering: Electric Field Stresses, Gas / Vacuum as Insulator, Liquid D electrics, Solids and Compotes, Estimation and Control of Electric Stress, Numerical methods for electric field Computation, Surge voltages, their distribution and control, Applications of insulating materials in transformer, rotating machines, circuit breakers, cable power capacitors and bushings.

UNIT- II

Break Down in Dielectric Materials: Gases as insulating media, collision process, Ionization process, Tow 'send's criteria of breakdown in gases, Paschen's law. Liquid as Insulator, pure and commercial liquids, breakdown in pure and commercial liquids. Intrinsic breakdown, elector mechanical breakdown, thermal breakdown, breakdown of solid dielectrics in practice, Breakdown in composite dielectrics, solid dielectrics used in practice.

UNIT-III

Generation & Measurement of High Voltages & 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 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

Over Voltages & Insulation Co-Ordination: Natural causes for over voltages — Lightning phenomenon, over Voltage due to switching surges, systems faults and other abnormal conditions, Principals of insulation Coordination voltage and Extra High Voltage power systems.

UNIT-V

Testing Of Materials & Electrical Apparatus: Measurement of D.C Resistivity, Measurement of Dielectric Constant and loss factor, Partial discharge measurements. 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.

TEXT BOOKS

1. High Voltage Engineering, M.S.Naidu and V. KamarJu, TMHPublications.
2. High Voltage Engineering, C.L.Wadhwa, New Age Internationals (P)Limited.

REFERENCE BOOKS

1. High Voltage Engineering: Fundamentals, E.Kuffel, W.S.Zaengi, J.Kuffel byElsevier.
2. High Voltage Insulation Engineering, Ravindra Arora, Wolfgang Mosch, New Age International (P)Limited.
3. High Voltage Engineering, Theory and Practice, Mazen Abdel Salam, Hussein Anis, Ahdan El-Morshedy, Roshdy Radwan, MarcelDekker

Course Outcome:

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

1. Basics of high voltageengineering,
2. Break-down phenomenon in different types of dielectrics,generation
3. Measurement of high voltages and currents, the phenomenon ofover-voltages,
4. Concept of insulationcoordination,
5. Testing of various materials and electrical apparatus used in high voltage engineering, With which he/she can able to apply the above conceptual things to real-world electrical power system and its applications.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

PROFESSIONAL ELECTIVE-III

(J7237) ADVANCED POWER SYSTEM PROTECTION

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

Pre-requisites: learn this course student should have the concepts on the following subjects: switch gear and protection

Course Objectives:

1. To Study The StaticRelays
2. To Study Phase Comparators and Static Over CurrentRelays
3. To study the Analysis of Static Differential Relays and Static DistanceRelays
4. To study the Multi-Input Comparators and Effect of power swings on the performanceof distancerelays
5. To study the Microprocessor based ProtectiveRelays

UNIT-I:

Static Relays: Advantages of static relays-Basic construction of static relays-Level detectors-Replica impedance –Mixing circuits-General equation for two input phase and amplitude comparators-Duality between amplitude and phase comparators.

Amplitude Comparators: Circulating current type and opposed voltage type- rectifier bridge comparators, Direct and Instantaneous comparators.

UNIT-II:

Phase Comparators: Coincidence circuit type- block spike phase comparator, techniques to measure the period of coincidence-Integrating type-Rectifier and Vector product type- Phase comparators.

Static Over Current Relays: Instantaneous over-current relay-Time over-current relays-basic principles –definite time and Inverse definite time over-current relays.

UNIT-III:

Static Differential Relays: Analysis of Static Differential Relays –Static Relay schemes –Duo bias transformer differential protection –Harmonic restraint relay.

Static Distance Relays: Static impedance-reactance–MHO and angle impedance relay-sampling comparator –realization of reactance and MHO relay using sampling comparator.

UNIT-IV:

Multi-Input Comparators: Conic section characteristics-Three input amplitude comparator –Hybrid comparator-switched distance schemes –Poly phase distance schemes- phase fault scheme –three phase scheme – combined and ground fault scheme.

Power Swings: Effect of power swings on the performance of distance relays –Power swing analysis-Principle of out of step tripping and blocking relays-effect of line and length and source impedance on distance relays.

UNIT-V:

Microprocessor based Protective Relays: (Block diagram and flowchart approach only)-Over current relays–impedance relays-directional relay-reactance relay .Generalized mathematical expressions for distance relays-measurement of resistance and reactance –MHO and offset MHO relays-Realization of MHO characteristics- Realization of offset MHO characteristics -Basic principle of Digital computer relaying.

TEXT BOOKS:

1. Badri Ram and D.N.Vishwakarma, "Power system protection and Switch gear ", TMH publication New Delhi1995.

2. T.S.Madhava Rao , "Static relays", TMH publication, second edition1989.

REFERENCE:

1. Protection and Switchgear, Bhavesh Bhalja, R. P. Mahesheari, Nilesh G. Chothani, Oxford UniversityPress.
2. Electrical Power System Protection, C. Christopoulos and A. Wright, Springer International.

Course Outcomes:

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

1. Basic construction of staticrelays
2. Phase Comparators and Static Over Current Relays characteristics
3. Static Differential Relays and Static Distance Relayscharacteristics
4. Multi-Input Comparatorscharacteristics
5. Basic principle of Digital computer relaying and Realization of MHOcharacteristics

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

PROFESSIONAL ELECTIVE-III

(J7238)INDUSTRIAL ELECTRICAL SYSTEMS

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

Pre-requisites: To learn this course student should have the concepts on the following subjects: Electrical Machines and Power Systems

Course Objectives:

1. Introduce to the Electrical SystemComponents
2. Learn about the Types of residential and commercial wiring systemComponents
3. To design of a lighting scheme for a residential and commercialpremises
4. To Study the Power factor correction and earthingDesign
5. To Study of basic PLC and SCADA system for distribution automation.

UNIT-I: Electrical System Components
LT system wiring components, selection of cables, wires, switches, distribution box, metering system, Tariff structure, protection components- Fuse, MCB, MCCB, ELCB, inverse current characteristics, symbols, single line diagram (SLD) of a wiring system, Contactor, Isolator, Relays, MPCB, Electric shock and Electrical safetypractices

UNIT-II: Residential and Commercial ElectricalSystems
Types of residential and commercial wiring systems, general rules and guidelines for installation, load calculation and sizing of wire, rating of main switch, distribution board and protection devices, earthing system calculations, requirements of commercial installation, deciding lighting scheme and number of lamps, earthling of commercial installation, selection and sizing of components.

UNIT-III: Illumination Systems
Understanding various terms regarding light, lumen, intensity, candle power, lamp efficiency, specific consumption, glare, space to height ratio, waste light factor, depreciation factor, various illumination schemes, Incandescent lamps and modern luminaries like CFL, LED and their operation, energy saving in illumination systems, design of a lighting scheme for a residential and commercial premises, flood lighting.

UNIT-IV: Industrial Electrical Systems I
HT connection, industrial substation, Transformer selection, Industrial loads, motors, starting of motors, SLD, Cable and Switchgear selection, Lightning Protection, Earthling design, Power factor correction – kVAR calculations, type of compensation, Introduction to PCC, MCC panels. Specifications of LT Breakers, MCB and other LT panel components.

UNIT-V: Industrial Electrical Systems II
DG Systems, UPS System, Electrical Systems for the elevators, Battery banks, Sizing the DG, UPS and Battery Banks, Selection of UPS and Battery Banks.

Industrial Electrical System Automation
Study of basic PLC, Role of in automation, advantages of process automation, PLC based control system design, Panel Metering and Introduction to SCADA system for distribution automation.

Text/Reference Books:

1. S. L. Uppal and G. C. Garg, “Electrical Wiring, Estimating & Costing”,Khannpublishers, 2008.
2. K. B. Raina, “Electrical Design, Estimating & Costing”, New age International,2007.
3. S. Singh and R. D. Singh, “Electrical estimating and costing”, Dhanpat Rai andCo.,1997.
4. Web site for IS Standards.
5. H. Joshi, “Residential Commercial and Industrial Systems”, McGraw HillEducation, 2008.

Course Outcomes:
At the end of this course, students will demonstrate the ability to
1. Understand the electrical systemsComponents
2. Understand the electrical wiring systems for residential, commercial andindustrial
3. Consumers, representing the systems with standard symbols and drawings,SLD
4. Understand various components of industrial electricalsystems..
5. Analyze and select the proper size of various electrical systemcomponents

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

PROFESSIONAL ELE CTIVE-IV

(J7239) ADVANCED CONTROL SYSTEMS

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

Pre- Requisites: To learn this course student should have the concepts on the following subject: Control Systems

Course Objectives:

1. To study the system performance using frequency domain analysis compensators to improve systemperformance
2. To study the system performance using . Lyapunov's stability and Lypanov's instability theorems.
3. To study the analysis of nonlinear control systems Using describingfunction,
4. To study the analysis of nonlinear control systems phaseplane
5. To study the Concepts of state, state variables and state model stability analysis including controllability andobservabilty.

UNIT–I

Stability Analysis-I: Frequency Domain: Polar Plots-Nyquist Plots-Stability Analysis. Lag, Lead, Lead-Lag Compensators design in frequency Domain.

UNIT —II

Stability Analysis-II: 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 —III

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

UNIT —IV

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

UNIT — V

State Space Analysis of Continuous Systems: Concepts of state, state variables and state model, derivation of state models from block diagrams, Denationalization- Solving the Time invariant state Equations- State Transition Matrix and it's Properties — Concepts of Controllability and Observability.

TEXT BOOKS:

1. Advanced Control Systems, B. N. Sarkar, PHI Learning PrivateLimited.
2. Modern Control System Theory, M. Gopal, New Age InternationalPublishers

REFERENCE BOOKS

1. Control Systems theory and applications, S.K Bhattacharya,Pearson.
2. Control Systems, N.C.Jagan, BSPublications.
3. Control Systems Engineering, I. J. Nagrath and M. Gopal, New Age International (P) Limited, Publishers.
4. Control Systems, N.K.Sinha, New Age International (P) LimitedPublishers.
5. Modern Control Engineering, K. Ogata, Prentice Hall of India, 3d edition,1998.
6. Advanced Control Theory, Somanath MJhi, CengageLearning.
7. Modern Control Engineering, D. Roy Choudhury, PHILearning.
8. Digital Control and State Variable Methods, M. Gopal, Tata Mc Graw HillCompanies.

Course Outcomes:

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

1. Stability Analysis of Frequency Domain, design of Lag, Lead, Lead-Lag Compensators in frequencyDomain
2. stability analysis through Lypanov stability, phase-plane analysis, non-linearsystems
3. Describing functions o**f** non-linearsystems
4. Phase-Plane Analysis o**f** non-linearsystems
5. State space analysis of continuous systems and concept of controllability and observably With which he/she can able to apply the above conceptual things to real-world electrical and electronics engineering problems and itsapplications.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(UGC-AUTONOMOUS)

PROFESSIONAL ELECTIVE-IV

(J7240)POWER SYSTEM DYNAMICS

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

Prerequisite: Computer Methods in Power Systems

Course objectives:

1. To make aware of modeling aspects of different power systemelements.
2. To analyze the dynamic performance of single machine connected to infinitepower systems.
3. To illustrate the system stability issues and requisite controlstrategies.
4. To analyze single machinesystem
5. To know the applications of power stabilizers

UNIT-I: BASIC CONCEPTS

Power system stability states of operation and system security - system dynamics - problems system model analysis of steady State stability and transient stability - simplified representation of Excitation control.

UNIT-II: MODELING OF SYNCHRONOUS MACHINE

Synchronous machine - park's Transformation-analysis of steady state performance per - unit quantities-Equivalent circuits of synchronous machine-determination of parameters of equivalent circuits.

UNIT-III: EXCITATION SYSTEM

Excitation system modeling-excitation systems block Diagram - system representation by state equations- Dynamics of a synchronous generator connected to infinite bus - system model Synchronous machine model-stator equations rotor equations - Synchronous machine model with field circuit - one equivalent damper winding on q axis (model 1.1) - calculation of Initial conditions.

UNIT-IV: ANALYSIS OF SINGLE MACHINE SYSTEM

Small signal analysis with block diagram - Representation Characteristic equation and application of Routh Hurwitz criterion- synchronizing and damping torque analysis-small signal model - Stateequations.

UNIT-V: APPLICATION OF POWER SYSTEM STABILIZERS

Basic concepts in applying PSS - Control signals - Structure and tuning of PSS - Washout circuit - Dynamic compensator analysis of single machine infinite bus system with and without PSS.

TEXT BOOK:

1. K.R. PADIYAR," Power system dynamics "- B.S. Publications.

REFERENCE BOOKS:

1. P.M. Anderson and A.A. Fouad,"Power system control and stability ",IEEEPresss
2. R. Ramanujam, "Power Systems Dynamics"- PHIPublications.

Course Outcomes:

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

1. Choose the fundamental dynamic behavior and controls of power systems to perform basic stabilityanalysis.
2. Comprehend concepts in modeling and simulating the dynamic phenomena ofpower systems
3. Interpret results of system stabilitystudies
4. Analyze theory and practice of modeling main power system components, such as synchronous machines, excitation systems andgovernors
5. The applications of powerstabilizers

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(UGC-AUTONOMOUS)

PROFESSIONAL ELECTIVE –IV
(J7241) LINEAR SYSTEMS ANALYSIS

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

Pre- Requisites: To learn this course student should have the concepts on the followingsubject: Electrical circuit-I,II and Controlsystems

Course Objectives:

1. To provide students with the modeling of electricalsystems.
2. To familiarize the students with the state space analysis of dynamic systems and Fourier seriesrepresentation.
3. To make students understand the concepts forurier transforms and Laplace transforms approach To have the different methods of representation of networksynthesis
4. Testing of polynomials. To familiarize the students with the concepts of sampling and z-transformations

UNIT-I State Variable Analysis

Choice of state variables in Electrical networks-Formulation of state equations for Electrical networks-Equivalent source method. Network topological method - Solution of state equations-Analysis of simple networks with state variable approach.

UNIT–II Fourier series and Fourier Transform Representation

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.

Applications of Fourier series and Fourier Transform Representation

Introduction, Effective value and average values of non sinusoidal periodic waves, currents, Power Factor, Effects of harmonics, Application in Circuit Analysis, Circuit Analysis using Fourier series.

UNIT – III Laplace Transform Applications

Application of Laplace transforms Methods of Ananlysis – Response of RL, RC, RLC Networks to Step, Ramp, and impulse functions, Shifting Theorem – Convolution Integral – Applications

UNIT-IV Testing ofPolynomials

Elements of reliability-Hurwitz polynomials-positive real functions-Properties-Testing-Sturm's Test, examples.

Network Sysnthesis

Synthesis of one port LC networks-Foster and Cauer methods-Synthesis of RL and RC one port networks-Foster and Cauer methods.

UNIT-V 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.

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 Publications2003.
2. Network Analysis and Synthesis – Umesh Sinha- Satya PrakashanPublications

REFERENCE BOOKS:

1. Linear System Analysis – AN N Tripathi, New AgeInternational
2. Network and Systems – D Roy Chowdhary, New AgeInternational
3. Engineering Network Analysis and Filter Desgin- Gopal G Bhisk &Umesh
4. Linear system anlysis by A.Cheng, Oxfordpublishers.

Course Outcomes:

1. Learn students with the modeling of electrical systems.
2. To familiarize the students with the state space analysis of dynamic systems and Fourier seriesrepresentation.
3. To make students understand the concepts forurier transforms and Laplace transforms approach to have the different methods of representation of networksynthesis.
4. Testing ofpolynomials.
5. To familiarize the students with the concepts of sampling andz-transformations.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(UGC-AUTONOMOUS)

(J7234)POWER SYSTEMS SIMULATION LAB

B.Tech. IV YearI-Sem EEE

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Any Ten of the following are to be conducted:

1. Computation of power system components in Per Units
2. Develop Program for Y_{BUS}formation.
3. Develop Program for G-S Load FlowAnalysis.
4. Develop Program for N-R Load FlowAnalysis.
5. Develop Program for FDLF Load FlowAnalysis.
6. Develop Program for Symmetrical Short Circuit Analysis.
7. Develop Program for Unsymmetrical Short CircuitAnalysis
8. Symmetrical Components for different casestudies
9. Numerical integration of Swing equation.
10. The Equal AreaCriteria.
11. The economical / optimal Loaddispatch.
12. Load frequencycontrol

Reference Books/Software:

1. IntroductiontoMATLABProgrammingbyProfessorKathleenOssman
2. MATLAB user'smanual
3. MATLAB–ControlSystemtoolbox

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(J8242)FUNDAMENTALS OF HVDC AND FACTS

B.Tech. IV YearII-Sem EEE

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

Pre- Requisites: To learn this course student should have the concepts on the followingsubject: Power systems-II, Power Electronics

Course Objectives:

1. To study the importance of HVDCtransmission
2. To study Analysis of HVDCconverters
3. To study Analysis of Harmonics Filters and Reactive PowerControl
4. To study basic FACTSconcepts
5. To study Static shunt and series compensation. Combined compensationtechniques.

UNIT—I

Introduction: Comparison of AC and DC transmission systems, application of DC transmission, types of DC links, typical layout of a HVDC converter station. HVDC converters, pulse number, analysis of Gratez circuit with and without overlap, converter bridge characteristics, equivalent circuits or rectifier and inverter configurations of twelve pulse converters.

UNIT—II

Converter & HVDC System Control: Principles of DC Link Control — Converters Control Characteristics — system control hierarchy, firing angle control, current and extinction angle control, starting and stopping of DC link.

UNIT-III

Harmonics, Filters and Reactive Power Control: Introduction, generation of harmonics, AC and DC filters. Reactive Power Requirements in steady state, sources of reactive power, static VAR systems.

Power Flow Analysis in AC/DC Systems: Modeling of DC/AC converters, Controller Equations-Solutions of AC/DC load flow —Simultaneous method-Sequential method.

UNIT-IV

Introduction to FACTS: Flow of power in AC parallel paths and meshed systems, basic types of FACTS controllers, brief description and definitions of FACTScontrollers.

Static Shunt Compensators: Objectives of shunt compensation, methods of controllable VAR generation, static VAR compensators, SVC and STATCOM, comparison between SVC and STATCOM.

UNIT-V

Static Series Compensators: Objectives of series compensation, variable impedance type-thyristor switched series capacitors (TCSC), and switching converter type series compensators, static series synchronous compensator (SSSC)-power angle characteristics-basic operating control schemes.

Combined Compensators: Introduction, unified power flow controller (UPFC), basic operating principle, independent real and reactive power flow controller, control structure.

TEXT BOOKS:

1. HVDC Transmission, S. Kamakshaiah, V. KamarJu, The Mc — Graw HillCompanies.
2. Understanding FACTS, Concepts and Technology of Flexible AC Transmission Systems, Narain. G. Hingorani, Laszlo Gyugyi, IEEE Press, WileyIndia.

REFERENCE BOOKS:

1. HVDCandFactsControllersApplicationsofStaticConvertersinPowerSystems,Vijay K. Sood, Kiuwer Academic Publishers.
2. HVDC Power Transmission Systems: Technology and system Interactions, K.R.Padiyar, New Age International (P) Limited.
3. Thyristor — Based Conrollers for Electrical Transmission Systems, R.Mohan Mathur, RJiv K. Varma.WileyIndia.
4. FACTS Modeling and Simulation in Power Networks, Enrique Acha, Wiley India Distributed by BSP Books Pvt.Ltd.

Course Outcomes:

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

1. Basics of HVDC system. and comparison of AC and DC transmissionSystem
2. Operation of Converters controlschemes
3. Harmonics filters reactive power control and power flow analysis in HVDCsystems
4. Basic concepts of FACTS, necessity of FACTS controllers and theiroperation,
5. Shunt and series compensation through various static compensators Withwhichhe/shecanabletoapplytheaboveconceptualthingstoreal-world electrical power system and its applications.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(UGC-AUTONOMOUS)

PROFESSIONAL ELECTIVE-V

(J8243) SMART GRID

B.Tech. IV YearII-Sem EEE

L	T	P	C
3	0	0	3

Pre- Requisites: To learn this course student should have the concepts on the following subject: Power Systems Renewable Energy sources and switch gear and protection

CourseObjectives:

1. To study the concepts of smart grid- Electricity network
2. To Study the DC Distribution and SmartGrid
3. To Study The Concept Of Dynamic EnergySystems
4. To Study The Concept of energy–Port
5. To Study The Industrial energy management programs and Manufacturingprocess

UNIT–I: INTRODUCTION

Introduction to smart grid- Electricity network-Local energy networks- Electric transportation- Low carbon central generation-Attributes of the smart grid- Alternate views of a smart grid.

SMART GRID TO EVOLVE A PERFECT POWER SYSTEM: Introduction- Overview of the perfect power system configurations- Device level power system- Building integrated power systems- Distributed power systems- Fully integrated power system-Nodes of innovation.

UNIT–II: DC DISTRIBUTION AND SMART GRID

AC vs DC sources-Benefits of and drives of DC power delivery systems-Powering equipment and appliances with DC-Data centers and information technology loads-Future neighborhood- Potential future work and research.

INTELLIGRID ARCHITECTURE FOR THE SMARTGRID: Introduction- Launching intelligrid-Intelligrid today- Smart grid vision based on the intelligrid architecture-Barriers and enabling technologies.

UNIT–III: DYNAMIC ENERGY SYSTEMS CONCEPT

Smart energy efficient end use devices-Smart distributed energy resources-Advanced whole building control systems- Integrated communications architecture-Energy management-Role of technology in demand response- Current limitations to dynamic energy management-Distributed energy resources-Overview of a dynamic energy management-Key characteristics of smart devices- Key characteristics of advanced whole building control systems-Key characteristics of dynamic energy management system.

UNIT–IV: ENERGY PORT AS PART OF THE SMART GRID:

Concept of energy -Port, generic features of the energy port.

POLICIES AND PROGRAMS TO ENCOURAGE END – USE ENERGY EFFICIENCY: Policies and programs in action -multinational - national-state-city and corporate levels.

MARKET IMPLEMENTATION: Framework-factors influencing customer acceptance and response - program planning-monitoring and evaluation.

UNIT–V: EFFICIENT ELECTRIC END – USE TECHNOLOGY ALTERNATIVES

Existing technologies – lighting - Space conditioning - Indoor air quality - Domestic water heating - hyper efficient appliances - Ductless residential heat pumps and air conditioners - Variable refrigerant flow air conditioning-Heat pump water heating - Hyper efficient residential appliances - Data center energy efficiency- LED street and area lighting - Industrial motors and drives - Equipment retrofit and replacement - Process heating - Cogeneration, Thermal energy storage - Industrial energy management programs - Manufacturing process-Electro-technologies, Residential, Commercial and industrial sectors.

TEXT BOOKS:

1. Clark W Gellings, “The Smart Grid, Enabling Energy Efficiency and Demand Side Response”- CRC Press,2009.
2. Janaka Ekanayake, Kithsiri Liyanage,Jianzhong.Wu,Akihiko Yokoyama, Nick Jenkins, “Smart Grid: Technology and Applications”- Wiley, 2012.
3. James Momoh, “Smart Grid :Fundamentals of Design and Analysis”- Wiley, IEEE Press, 2012.

Course Outcomes:

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

1. Basic concepts of smart grid and Local energynetworks
2. Benefits of DC power delivery systems and Smart grid vision based on the intelligent gridarchitecture
3. Energy management and Distributed energyresources
4. Concept of energy-Port
5. The Industrial energy management programs, Manufacturing process andEfficient ElectricEnd

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(UGC-AUTONOMOUS)

PROFESSIONAL ELECTIVE –V
(J8244) MODERN POWER ELECTRONIC CONVERTERS

B.Tech. IV YearII-SemesterEEE **L T PC**

3 0 0 3

Pre- Requisites: To learn this course students should have the concepts on the following subjects Power Electronics

Course Objectives :

1. To study basics of modern power semiconductor devices
2. To Study the Resonant pulse inverters operation andapplications.
3. To Study the Resonant converters and applications.
4. To Study principle of operation of multilevel inverter applications and reactive power compensation
5. To Study bidirectional DC power supplies and uninterruptible AC power supplies applications

UNIT -I:

Modern power semiconductor devices Modern power semiconductor devices- MOS Turn Off Thyristor (MTO) – Emitter Turn Off Thyristor (ETO) – Integrated Gate – Commutated thyristor (IGCTs) – MOS – controlled thyristors (MCTs) – Static induction Thyristors (SITHs) – Power integrated circuits (PICs) – Symbol, 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 bride resonant inverter- evaluation of currents and Voltages of a simple resonant inverter – analysis of half bridge and full bridge resonant inverter with bidirectional switches – Frequency response of series resonant inverter- for series loaded inverter – for parallel resonant inverters – Voltage control of resonant inverters-class E resonant inverter – class E resonant rectifier- evaluation of values of C‟s and L‟s for class E inverter and Class E rectifier –numerical problems.

UNIT-III:

Resonant Converters: Resonant converters- 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 zero current switching inverter – Numerical problems

. Multilevel Inverters: Multilevel concept- Classification of multilevel inverters – Diode clamped multilevel inverter Principle of operation – main features- improved diode clamped inverter – principle of operation – Flying capacitors multilevel inverter – principle of operation – main features.

UNIT-IV:

Multilevel inverters (continued) 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 multilevel converters.

UNIT-V:

DC Power supplies: DC power supplies – classification- switched mode dc power supplies – fly back Converter forward converter- push –pull converter –half bridge converter –Full bridge converter – Resonant DC power supplies- bidirectional power supplies- Application.

AC Power Supples: AC power supplies – classification – switched mode ac power supplies Resonant AC power supplies-bidirectional ac power supplies – multistage conversions- control circuits- applications. Power conditioners and Uninterruptible Power Supplies: Introduction-power line disturbances – power conditioners- uninterruptible power supplies applications.

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.Robbind – John wiley & Sons – SecondEdition

REFERENCES:

1. Power Electronics andconverters—M.D.Singh

2. Power Electronics – Ned Mohan, Tore M.Undeland and William P.Robbind – John wiley & Sons – SecondEdition

COURSE OUTCOMES:

After going through this course the student gets a thorough knowledgeon,

1. Modern power semiconductor devices structures and applications.
2. Operation and design of Resonant pulseinverters
3. Operation and design of Flying capacitors multilevelinverter.
4. Operation and design of Cascaded multilevelinverter.
5. Design of AC and DC power supplies Multileveloperations

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(UGC-AUTONOMOUS)

PROFESSIONAL ELECTIVE –V

(J8245)POWER SYSTEM RELIABILITY

B.Tech. IV YearII-SemesterEEE	**L T PC**
	3 0 0 3

Pre-requisites: learn this course student should have the concepts on the following subjects: Power system-I

Course Objectives:

1. This subject introduces the concept of probability, reliability, distributionfunctions,
2. Various methods and techniques to calculate and estimate the reliability of different engineering problems andmodels.
3. Operating Reserve Evaluation, Bulk Power System ReliabilityEvaluation
4. Inter Connected System ReliabilityAnalysis
5. Distribution System Reliability. Analysis Substations and SwitchingStations

UNIT-I: Generating System Reliability Analysis – I

Generation system model – capacity outage probability tables – Recursive relation for capacitive model building – sequential addition method – unit removal – Evaluation of loss of load and energy indices – Examples.

UNIT-II: Generating System Reliability Analysis – II

Frequency and Duration methods – Evaluation of equivalent transitional rates of identical and non-identical units – Evaluation of cumulative probability and cumulative frequency of non-identical generating units – 2- level daily load representation - merging generation and load models – Examples.

UNIT-III: Operating Reserve Evaluation

Basic concepts - risk indices – PJM methods – security function approach – rapid start and hot reserve units – Modeling using STPM approach.

Bulk Power System Reliability Evaluation

Basic configuration – conditional probability approach – system and load point reliability indices – weather effects on transmission lines – Weighted average rate and Markov model – Common modefailures.

UNIT-IV: Inter Connected System Reliability Analysis

Probability array method – Two inter connected systems with independent loads – effects of limited and unlimited tie capacity - imperfect tie – Two connected Systems with correlatedloads – Expression for cumulative probability and cumulativefrequency.

Distribution System Reliability Analysis – I (Radial configuration):

Basic Techniques – Radial networks –Evaluation of Basic reliability indices, performance indices– load point and system reliability indices – customer oriented, loss and energy oriented indices – Examples.

UNIT-V: Distribution System Reliability Analysis-II(Parallel Configuration)

Basic techniques – inclusion of bus bar failures, scheduled maintenance – temporary and transient failures – weather effects – common mode failures –Evaluation of various indices – Examples

Substations and Switching Stations

Effects of short-circuits - breaker operation – Open and Short-circuit failures – Active and Passive failures – switching after faults – circuit breaker model – preventive maintenance – exponential maintenance times.

TEXT BOOK

1. Reliability Evaluation of Power systems — R. Billinton, R.N.Allan, Pitman Advance Publishing Program, New York, reprinted in India by B.S.Publications,2007.
2. Assessment of Power System Reliability Methods and Applications—MarkoCepin

REFERENCE BOOKS:

1. Reliability Evaluation of Power Systems by Roy Billinton and Ronald N. Allan, Plenum press, New York and London (Second Edition), 1996.
2. Reliability Modeling in Electric Power Systems by J. Endrenyi, John Wiley and Sons, 1978. (FirstEdition)

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

1. Basic probabilitytheory,
2. Distribution functions, reliability analysis of various models through different n,ethics, reliabilityfunctions,
3. Repairable irreparable systems reliability through markov modelingfrequency
4. Duration techniques, with which he/she can able to apply the above conceptualthings
5. Real-world electrical and electronics problems andapplications.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

PROFESSIONAL ELECTIVE –VI

(J8246)SOFT COMPUTING TECHNIQUES

B.Tech. IV YearII-SemesterEEE **L T PC**

3 0 0 3

COURSE OBJECTIVES:

1. To study basics of artificial neuralnetwork.
2. To learn Concepts of modelling and control of neural networkschemes.
3. To expose the ideas about modelling fuzzy controlschemes
4. To teach about the concept of fuzziness involved in varioussystems
5. To understand the Features of hybrid controlschemes.

UNIT I
ARTIFICIAL NEURAL NETWORK
Review of fundamentals–Biological neuron, artificial neuron, activation function, single layer perceptron–Limitation–Multi layer perceptron–Back Propagation Algorithm(BPA)–Recurrent Neural Network (RNN)–Adaptive Resonance Theory (ART) based network–Radial basis function network–online learning algorithms, BP through time–RTRL algorithms–Reinforcement learning

UNIT II
NEURAL NETWORKS FOR MODELING AND CONTROL
Modelling of non-linear systems using ANN–Generation of training data–Optimal architecture–Model validation–Control of non-linear systems using ANN–Direct and indirect neuro control schemes–Adaptive neuro controller–Familiarization with neural network toolbox.

UNIT III
FUZZY SET THEORY
Fuzzy set theory–Fuzzy sets–Operation on fuzzy sets–Scalar cardinality, fuzzy cardinality, union and intersection, complement (Yager and Sugeno), equilibrium points, aggregation, projection, composition, cylindrical extension, fuzzy relation–Fuzzy membership functions.

UNIT IV
FUZZY LOGIC FOR MODELING AND CONTROL
Modelling of non-linear systems using fuzzy models–TSK model–Fuzzy logic controller–Fuzzification–Knowledge base–Decision making logic–Defuzzification–Adaptive fuzzy systems–Familiarization with fuzzy logic toolbox.

UNIT V
HYBRID CONTROL SCHEMES
Fuzzification and rule base using ANN–Neuro fuzzy systems–ANFIS–Fuzzy neuron–GA–Optimization of membership function and rule base using Genetic Algorithm–Introduction to other evolutionary optimization techniques, support vector machine–Case study–Familiarization with ANFIS toolbox.

TEXT BOOKS:

1. Laurence Fausett, “Fundamentals of Neural Networks”, Prentice Hall, Englewood Cliffs, N.J., 1992
2. Timothy J. Ross, “Fuzzy Logic with Engineering Applications”, McGraw HillInc.,2000.

REFERENCES

1. Goldberg, “Genetic Algorithm in Search, Optimization and Machinelearning”,Addison Wesley Publishing Company Inc.1989
2. Millon W.T., Sutton R.S. and Webrose P.J., “Neural Networks for Control”, MITpress, 1992
3. Ethem Alpaydin, “Introduction to Machine learning (Adaptive Computation andMachine Learning series)’, MIT Press, Second Edition,2010.
4. Zhang Huaguang and Liu Derong, “Fuzzy Modeling and Fuzzy Control Series: Control Engineering”,2006

COURSE OUT COMES:

1. Ability to understand the concepts of ANN, different features of fuzzy logic andtheir modeling, control aspects and different hybrid controlschemes.
2. Ability to understand the basics of artificial neuralnetwork.
3. Ability to get knowledge on modelling and Fuzzycontrol.
4. Ability to get knowledge on fuzziness involved in various controlschemes.
5. Ability to acquire knowledge on hybrid controlschemes.And improve employability in field of software industry

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

PROFESSIONAL ELECTIVE –VI

(J8247) DIGITL CONTROL SYSTEMS

B.Tech. IV YearII-SemesterEEE **L T PC**

3 0 0 3

Pre- Requisites: To learn this course student should have the concepts on the followingsubject: Control systems

COURSE OBJECTIVES:

1. This course gives fundamentals digital controlsystems,
2. z-transforms, state space representation of the controlsystems,
3. concepts of controllability andobservavably.
4. Estimation of stability in different domains, design of discrete time controlsystems,
5. compensators, state feedback controllers, state observers through varioustransformations.

UNIT-I

Introduction: Introduction, Examples of Data control systems — Digital to Analog conversion and Analog to Digital conversion, sample and hold operations. Z — TRANSFORMS: Introduction, Linear difference equations, pulse response, Z — transforms, Theorems of Z — Transforms, the inverse Z — transforms, Modified Z- Transforms. Z-Transform method for solving difference equations; Pulse transforms function) block diagram analysis of sampled — data systems, mapping between s-plane and z-plane.

UNIT — II

State Space Analysis: State Space Representation of discrete time systems, Pulse Transfer Function Matrix solving discrete time state space equations, State transition matrix and its Properties, Methods for Computation of State Transition Matrix, Discretization of continuous time state — space equations. Concepts of Controllability and Observability, Tests for controllability and Observability. Duality between Controllability and Observability, Controllability and Observability conditions for Pulse Transfer Function.

UNIT —III

Stability Analysis: Mapping between the S-Plane and the Z-Plane — Primary strips and Complementary Strips — Constant frequency loci, Constant damping ratio loci, Stability Analysis of closed loop systems in the Z-Plane. Jury stability test — Stability Analysis by use of the Bilinear Transformation and Routh Stability criterion.

UNIT-IV

Design of Discrete Time Control System: Transient and steady — State response Analysis — Design based on the frequency response method — Bilinear Transformation and Design procedure in the w-plane, Lead, Lag and Lead-Lag compensators and digital PID controllers.

UNIT-V

State Feedback Controllers & Observers: Design of state feedback controller through pole placement — Necessary and sufficient conditions, Ackerman's formula. State Observers — Full order and Reduced order observers.

TEXT BOOK

1. Discrete-Time Control systems – K. Ogata, Pearson Education/PHI, 2Edition.
2. Digital Control Systems, Kuo, Oxford University Press, 2 Edition, 2003.Digital Control and State Variable Methods by M.Gopal,TMH.

REFERENCE BOOKS

1. Digital Control Engineering Analysis and Design M. Sami Fadali Antonio Visioli, AP AcademicPress.
2. Digital Control Systems , V. I. George, C. P. Kurian, CengageLearning

COURSE OUTCOMES:

1. After going through this course the student gets a thorough knowledge on, basics of digital controlsystems,
2. z-transforms, mapping between S-plane and Z-plane, state-space analysis, concept of controllability andobservabilty,
3. derivation of pulse-transfer function, stability analysis in S-domain and Z domains, stability through jury-stability test, stability through bilineartransformation
4. R-H criteria, design of discrete-time control systems, design of lag, lead, lead-lag compensators, design of PID controllers and design of state feedbackcontrollers
5. Observers, with which he/she can able to apply the above conceptual things to real-world electrical and electronics problems andapplications.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

PROFESSIONAL ELECTIVE –VI

(J8248) EXTRA HIGH VOLTAGE AC TRANSMISSION

B.Tech. IV YearII-Sem EEE	L	T	P	C
	3	0	0	3

Pre- Requisites: To learn this course student should have the concepts on the following subject: Power systems-II.

Course Objectives:

1. To study the concepts of extra high voltage ACtransmission.
2. To study the behavior of the line parameters for extra high voltages, voltage gradients of the transmission line conductorsgradients
3. To study the effect ofcorona
4. To study the Electrostatic field calculations& travelling wave theoryconcept
5. To study the control of Extra high voltages in transmissionlines.

UNIT — I

Introduction: Necessity of EHV AC transmission — advantages and problems—power handling capacity and line losses- mechanical considerations — resistance of conductors — properties of bundled conductors — bundle spacing and bundle radius- Examples. Line and ground reactive parameters: Line inductance and capacitances — sequence inductances and capacitances — modes of propagation — ground return — Examples

UNIT — II

Voltage Gradients of Conductors: Electrostatics — field of sphere gap — held of line changes and properties — charge — potential relations for multi- conductors — surface voltage gradient on conductors — distribution of voltage gradient on sub-conductors of bundle — Examples.

UNIT — III

Corona Effects: Power loss and audible noise (AN) — corona loss formulae — charge voltage diagram — generation, characteristics – limits and measurements of AN — relation between 1-phase and 3-phase AN levels — Examples. Radio interference (RI) – corona pulses generation, properties, limits — frequency spectrum — modes of propagation — excitation function — ‘measurement of RI, RIV and excitation functions — Examples.

UNIT — IV

Electro Static Field: Electrostatic field: calculation of electrostatic field of EHV/AC lines — effect on humans, animals and plants — electrostatic induction un-energized circuit of double-circuit line — electromagnetic interference- Examples.

Traveling wave theory: Traveling wave expression and solution- source of excitation- terminal conditions- open circuited and short-circuited end-reflection and refraction coefficients-Lumped parameters of distributed lines- generalized constants-No load voltage conditions and charging current.

UNIT -V

Voltage Control: Power circle diagram and its use — voltage control using synchronous condensers — cascade connection of shunt and series compensation — sub synchronous resonance in series capacitor — compensated lines — static VAR compensating system.

TEXT BOOKS:

1. EHVAC Transmission Engineering by R. D. Begamudre, New Age International (p)Ltd.
2. HVAC and DC Transmission by S.Rao.
3. REFERENCEBOOKS
4. Rokosh Das Begamudre,"Extra High Voltage AC Transmission Engineering"— Wiley EasternLTD.
5. Edison,"EHV Transmission line"- ElectricInstitution.

REFERENCES :

1. Rokosh Das Begamudre,"Extra High Voltage AC Transmission Engineering"— Wiley EasternLTD.
2. Edison,"EHV Transmission line"- ElectricInstitution

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

1. General aspects EHV ACtransmission
2. Necessity of extra high voltage (EHVAC) transmission, advantages and disadvantages of EHVAC,
3. concepts of voltage gradient, effects ofcorona,
4. electro static field calculations, theory of travellingwaves
5. voltage control of EHVAC transmission, with which he/she can able to apply the above conceptual things to real-world electricalsystem.

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ACADEMIC AND COURSE STRUCTURE

DETAILEDSYLLABUS

COLLEGE CODE : C4

MECHANICAL ENGINEERING

For

B.TECH. FOUR YEAR DEGREE COURSE

(Applicable for the batches admitted from 2018-2019)

JAYAMUKHI INSTITUTE OF TECHNOLOGICALSCIENCES

(UGC-AUTONOMOUS)

Narsampet, Warangal (Rural) – 506 332
Telangana State, India

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

COURSE STRUCTURE
(Applicable for the batches admitted from A.Y. 2018-2019 onwards)

I YEAR -ISEMESTER **ISEMESTER**

S.No.	Subject Code	Subject	Marks		L	T	P	Credits
			Internal	External				
1	J1001	Mathematics-I	30	70	3	1	0	4
2	J1007	Engineering Physics	30	70	3	1	0	4
3	J1008	Engineering Chemistry	30	70	3	1	0	4
4	J1301	Engineering Mechanics	30	70	3	1	0	4
5	J1009	EngineeringPhysics&ChemistryLab	30	70	0	0	3	1.5
6	J1303	Engineering Workshop	30	70	1	0	3	2.5
		Induction Programme						
		Total Credits			**13**	**4**	**6**	**20**

I **YEAR -IISEMESTER** **IISEMESTER**

S.No.	Subject Code	Subject	Marks		L	T	P	Credits
			Internal	External				
1	J2002	Mathematics-II	30	70	3	1	0	4
2	J2011	English	30	70	2	0	0	2
3	J2202	Basic Electrical & Electronics Engineering	30	70	2	1	0	3
4	J2302	Engineering Graphics	30	70	1	0	4	3
5	J2501	Programming for Problem Solving	30	70	3	1	0	4
6	J2502	ProgrammingforProblemSolvingLab	30	70	0	0	3	1.5
7	J2203	Basic Electrical & Electronics Engineering Lab	30	70	0	0	3	1.5
8	J2012	English Language & communication Skills Lab	30	70	0	0	2	1

		Total Credits			**11**	**3**	**12**	**20**

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

COURSE STRUCTURE
(Applicable for the batches admitted from A.Y. 2018-2019 onwards)

II YEAR -ISEMESTER IIISEMESTER

S.No.	Subject Code	Subject	Marks		L	T	P	Credits
			Internal	External				
1	J3005	ProbabilityDistribution&ComplexVariables	30	70	3	1	0	4
2	J3305	Engineering Thermodynamics	30	70	3	0	0	3
3	J3306	Mechanics of Solids	30	70	3	0	0	3
4	J3307	Material Science and Metallurgy	30	70	3	0	0	3
5	J3309	Mechanics of Fluids & Hydraulic Machinery	30	70	3	1	0	4
6	J3308	MaterialTestingandMetallurgyLab	30	70	0	0	3	1.5
7	J3310	MechanicsofFluids&HydraulicMachineryLab	30	70	0	0	3	1.5
		Total Credits			**15**	**2**	**6**	**20**
8	JMC01	Environmental Science	30	70	2	0	0	0

II YEAR -IISEMESTER IVSEMESTER

S.No.	Subject Code	Subject	Marks		L	T	P	Credits
			Internal	External				
1	J4E02	Managerial Economics & Financial Analysis	30	70	3	0	0	3
2	J4313	Thermal Engineering - I	30	70	3	1	0	4
3	J4314	Kinematics of Machinery	30	70	3	1	0	4
4	J4315	Manufacturing Processes	30	70	3	0	0	3
5		**Open Elective - I**	30	70	3	0	0	3
6	J4316	Manufacturing Processes Lab	30	70	0	0	3	1.5
7	J4317	Machine Drawing Practice	30	70	0	0	3	1.5
		Total Credits			**15**	**2**	**6**	**20**
8	JMC02	Gender Sensitization	100	-	2	0	0	0

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
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COURSE STRUCTURE
(Applicable for the batches admitted from A.Y. 2018-2019 onwards)

III YEAR -ISEMESTER VSEMESTER

S.No.	Subject Code	Subject	Marks		L		P	Credits
			Internal	External				
1	J5E01	Management Science	30	70	3	0	0	3
2	J5318	Dynamics of Machinery	30	70	3	0	0	3
3	J5319	Thermal Engineering - II	30	70	3	1	0	4
4	J5321	Manufacturing Technology	30	70	4	0	0	4
5	J5333 J5334 J5335	**Professional Elective - I** 1. Finite Element Method 2. Robotics 3. Production Planning andControl	30	70	3	0	0	3
6	J5320	Thermal Engineering Lab	30	70	0	0	3	1.5
7	J5322	Manufacturing Technology Lab	30	70	0	0	3	1.5
		Total Credits			**16**	**1**	**6**	**20**
8	JMC03	Constitution of India	30	70	2	0	0	0

III YEAR -IISEMESTER VISEMESTER

S.No.	Subject Code	Subject	Marks		L	T	P	Credits
			Internal	External				
1	J6323	Design of Machine Elements	30	70	3	0	0	3
2	J6324	Heat Transfer	30	70	3	1	0	4
3	J6336 J6337 J6338	**Professional Elective - II** 1. Refrigeration and AirConditioning 2. Advanced StrengthMaterials 3. Theory of MetalCutting	30	70	3	0	0	3
4	J6339 J6340 J6341	**Professional Elective - III** 1. OperationResearch 2. Tribology 3. Additive Manufacturing	30	70	3	0	0	3
5		**Open Elective - II**	30	70	3	0	0	3
6	J6325	Heat Transfer Lab	30	70	0	0	3	1.5
7	J6326	Production Drawing Practice	30	70	0	0	3	1.5
8	J6380	Internship	100	-	0	0	2	1
		Total Credits			**15**	**1**	**8**	**20**

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(UGC-AUTONOMOUS)

COURSE STRUCTURE

(Applicable for the batches admitted from A.Y. 2018-2019 onwards)

IV YEAR -ISEMESTER VIISEMESTER

S.No.	Subject Code	Subject	Marks		L	T	P	Credits
			Internal	External				
1	J7327	Metrology and Instrumentation	30	70	2	1	0	3
2	J7329	CAD / CAM	30	70	3	0	0	3
3	J7342 J7343 J7344	**Professional Elective - IV** 1. Power PlantEngineering 2. Automation inManufacturing 3. MechanicsofCompositeMaterials	30	70	3	0	0	3
4		**Open Elective - III**	30	70	3	0	0	3
5		**Open Elective - IV**	30	70	3	0	0	3
6	J7328	Metrology and Instrumentation Lab	30	70	0	0	3	1.5
7	J7330	CAD / CAM Lab	30	70	0	0	3	1.5
8	J7381	Mini Project	100	--	0	0	4	2
		Total Credits			**14**	**1**	**10**	**20**

IV YEAR -IISEMESTER VIIISEMESTER

S.No.	Subject Code	Subject	Marks		L	T	P	Credits
			Internal	External				
1	J8345 J8346 J8347	**Professional Elective - V** 1. UnconventionalMachiningProcesses 2. Automobile Engineering 3. MechanicalVibrations	30	70	3	0	0	3
2	J8348 J8349 J8350	**Professional Elective - VI** 1. Computational Fluid Dynamics 2. Theory ofElasticity 3. PlantLayout&MaterialHandling	30	70	3	0	0	3
3		**Open Elective - V**	30	70	3	0	0	3
4	J8382	Technical Seminar	100	--	0	1	0	1
5	J8383	Comprehensive Viva-Voce	100	--	0	0	4	2
6	J8384	Major Project	30	70	0	0	16	8
		Total Credits			**9**	**1**	**20**	**20**
7	J8385	**NSS***			-	-	-	2*

***Refer Academic Regulation, Item No. 01 Sub Section (ii)**

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

LIST OF OPEN ELECTIVES OFFERED AT COLLEGE LEVEL

S. No.	Subject Code	Subject
1	J_150	Remote Sensing & GIS
2	J_151	Traffic Engineering and Transportation Planning
3	J_152	Disaster Preparedness & Planning
4	J_153	Environmental Imapact Assessment
5	J_219	Control Systems
6	J_223	Renewable Energy Sources
7	J_224	Energy Storage Systems
8	J_238	Industrial Electricals Systems
9	J_249	Electrical Engineering Materials
10	J_250	Neural Networks & Fuzzy Logic
11	J_351	Basic Mechanical Engineering
12	J_352	Applied Mechanics
13	J_353	Material Science
14	J_354	Basics of Thermodynamics
15	J_355	Strength of Materials
16	J_356	Modeling and Simulation of manufacturing systems
17	J_357	Mechatronics
18	J_358	Finite Element Analysis
19	J_359	Nano Technology
20	J_402	Signals and Systems
21	J_409	Digital System Design
22	J_410	Electromagnetic Waves and Transmission Lines
23	J_414	IC Applications
24	J_415	Digital Signal Processing
25	J_418	Bio Medical Electronics
26	J_419	Computer Organization
27	J_422	Linear Control Systems
28	J_424	Microprocessors and Microcontrollers

29	J_434	Image and Video Processing
30	J_437	Embedded Systems
31	J_447	Wireless Sensor Networks
32	J_454	Microprocessors and Interfacing
33	J_456	Digital Image Processing
34	J_518	Database Management Systems
35	J_528	Computer Networks
36	J_529	Machine Learning
37	J_538	Data Mining
38	J_539	Cryptography & Network Security
39	J_547	Cloud Computing
40	J_551	INternet of Things (loT)
41	J_553	Soft Computing
42	J_555	Data Science & Big Data Analytics
43	J_556	Natural Language Processing
44	J_559	Semantic Web & Social Networks
45	J_560	E-Commerce
46	J_E01	Management Science
47	J_E02	Managerial Economics and Financial Analysis
48	J_E03	Total Quality Management
49	J_E04	Global Marketing
50	J_E05	Green Marketing
51	J_E06	Intellectual Property Rights
52	J_E07	Supply Chain Management
53	J_E08	Statistical Quality Control
54	J_E09	Financial Statement Analysis and Reporting
55	J_E10	Micro Small Medium Enterprises Management
56	J_E11	Entrepreneurship Development
57	J_E12	Organizational Behaviour
58	J_E13	Industrial Management
59	J_E14	Production and Operations Management
60	J_E15	Economic Policies of India

Note : '_' represents the applicable semester code

Note : The syllabus of Open Elective subjects is kept available in the Departments and website

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J1001) MATHEMATICS - I

B.TECH. I YEAR –ISEM **L T P C**
3 1 0 4

Pre-requisites: Mathematical Knowledge at pre-university level

Objectives: The Students able to learn

1. Types of matrices and theirproperties.
2. Concept of a rank of the matrix and applying this concept to know the consistency and solving the system of linearequations.
3. Conceptofeigenvaluesandeigenvectorsandtoreducethequadraticform to canonicalform.
4. Concept ofSequence.
5. Concept of nature of theseries.
6. Geometrical approach to the mean value theorems and their application to the mathematicalproblems.
7. Evaluationofsurfaceareasandvolumesofrevolutionsofcurves.
8. Evaluation of improper integrals using Beta and Gammafunctions.
9. Partial differentiation, concept of total derivative Finding maxima and minima of function of two and threevariables.

UNIT-I

Matrices: Matrices:TypesofMatrices,Symmetric;Hermitian;Skew-symmetric; Skew-Hermitian; orthogonal matrices; Unitary Matrices; rank of a matrix by Echelon form and Normal form, Inverse of Non-singular matrices by Gauss-Jordan method; System of linear equations; solving system of Homogeneous and Non-Homogeneous equations. Gauss-elimination method; Gauss Seidel IterationMethod.

UNIT-II

Eigen values and Eigen vectors: Linear Transformation and Orthogonal Transformation: Eigen values and Eigenvectors and their properties: Diagonalization of a matrix; Cayley-Hamilton Theorem (without proof); finding inverse and power of a matrix by Cayley-Hamilton Theorem; Quadratic forms and Nature of the Quadratic Forms; Reduction of Quadratic form to canonical forms by Orthogonal Transformation.

UNIT-III

Sequence: Definition of a Sequence, limit; Convergent, Divergent and Oscillatory sequences.

Series: Convergent,DivergentandOscillatorySeries;Seriesofpositiveterms; Comparisontest,p-test,D-Alembert'sratiotest;Raabe'stest;Cauchy'sIntegral test; Cauchy's root test; logarithmic test. Alternating series: Leibnitz test; Alternating Convergent series: Absolute and ConditionallyConvergence.

UNIT-IV

Calculus: Mean value theorems: Rolle's theorem, Lagrange's Mean value theoremwiththeirGeometricalInterpretationandapplications,Cauchy'sMean value Theorem. Taylor's Series. Applications of definite integrals to evaluate surface areas and volumes of revolutions of curves (Only in Cartesian coordinates), Definition of Improper Integral: Beta and Gamma functions and theirapplications.

UNIT-V

Multivariablecalculus(PartialDifferentiationandapplications): Definitions of Limit andcontinuity.

Partial Differentiation; Euler's Theorem; Total derivative; Jacobian; Functional dependence&independence,Maximaandminimaoffunctionsoftwovariables and three variables using method of Lagrangemultipliers.

Text books:

1. B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36thEdition,2010.
2. Erwinkreyszig,AdvancedEngineeringMathematics,9thEdition,JohnWiley &Sons,2006.
3. G.B. Thomas and R.L. Finney, Calculus and Analytic geometry, 9thEdition,Pearson, Reprint,2002.

References:

1. N.P. Bali and Manish Goyal, A text book of Engineering Mathematics, LaxmiPublications, Reprint,2008.
2. Ramana B.V., Higher Engineering Mathematics, Tata McGraw Hill New Delhi,11thReprint,2010.

***Outcomes*:** After learning the contents of this paper the student must be able to

1. Write the matrix representation of a set of linear equations and to analyse the solution of the system ofequations.
2. Find the Eigenvalues and Eigenvectors.
3. Reduce the quadratic form to canonical form using orthogonal transformations.
4. Analyse the nature of sequence andseries.
5. Solve the applications on the mean valuetheorems.
6. Evaluate the improper integrals using Beta and Gamma functions. Find theextremevaluesoffunctionsoftwovariableswith/withoutconstraints.

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J1007) ENGINEERING PHYSICS

B.TECH. I YEAR –ISEM **L T P C 3 1 0 4**

Objectives :

1. Enable the student to connect the historical development of quantum mechanics and learn the basic principles of quantum mechanics and employs the Bloch's theorem to draw the band structure of solids on the basis of Kronig Pennymodel.
2. The students learn basic theory of semiconductors and principles and operations of optoelectronicdevices.
3. The Students to understand the basic properties of light, Concepts of LASER and it's engineeringapplications.
4. Enable the students to learn the basic principles of dielectrics, magnetic superconductors and their engineeringapplications.
5. Enable the students to learn about the types of oscillation, mechanics, whichhelpsinanalyzingandsolvingtheengineeringproblems.

UNIT-I

Quantum Mechanics: Introduction to quantum mechanics**,** Wave nature of the particle, de-Broglie's hypothesis, Davisson and Germer's experiment, GP Thompson experiment, Heisen berg's uncertainty principle, Schrodinger time independent wave equation, Particle in one dimensionalbox.

BandtheoryofSolids: Electroninperiodicpotential–Blochtheorem**,**Kronig–Penny Model, Brillion zone concept, Effective mass of an electron, Origin of energy band formation-Classification ofmaterials.

UNIT-II

SemiconductorPhysics: Introductiontointrinsicandextrinsicsemiconductors, Carrier concentration in conduction band and valancy band of intrinsic and extrinsic semiconductor, Fermi level, Effect of carrier concentration and temperatureonFermilevel,HallEffect-Applicationsofsemiconductors.

Semiconductor Optoelectronics: Radative and Non-radative recombination mechanisms in semiconductors, Formation of PN junction diode-V-I characteristics, Zener diode - characteristics, Solar cell and LED- Construction and working mechanism.

UNIT-III

Optics: Huygens' principle, Superposition of waves and interference of light bywavefrontsplittingandamplitudesplitting;Young'sdoubleslitexperiment, Newton’s rings, Michelson interferometer, Farunhofer diffraction from a single slit, Diffraction grating and resolving power.

Lasers :Introduction-characteristics of lasers, absorption, spontaneous emission, stimulated emission, Einstein’s theory of matter radiation interaction and A and B coefficients; amplification of light by population inversion, Ruby laser,He-Nelaser,Semiconductordiodelaser,applicationsoflasersinscience, Engineering andMedicine.

UNIT-IV

Dielectric Materials: Introduction-Types of Polarizations, derivation for electronic and ionic polarizabilities, internal fields in solids, Clausius Mossotti equation, Ferro electricity, structure of $BaTiO_{3,}$ piezo-electricity.

Magnetic Materials: Introduction-origin of magnetic moment, Bohr Magneton, classification of Dia, Para and Ferro magnetic materials, Hysteresis curve, Soft and hard magnetic materials; Superconductivity- properties, BCS theory, Type –I &IISuperconductors-Applications.

UNIT-V

Oscillations, waves: Simple harmonic motion, Damped and forced simple harmonic oscillator, damped harmonic oscillator – heavy, critical and light damping quality factor, forced mechanical oscillators, mechanical impedance, steady state motion of forced damped harmonic oscillator.

Mechanics: Motionofarigidbodyintheplane;Rotationintheplane;Kinematics inacoordinatesystemrotatingandtranslatingintheplane;Angularmomentum about a point of a rigid body in planar motion; Euler’s laws of motion, their independence from Newton’s laws, and their necessity in describing rigid body motion.

Text Books :

1. Introduction to Quantum Physics-Eisberg andResnick.
2. J. Singh, Semiconductor Optoelectronics: Physics and Technology, McGraw-HillInc.
3. H.J. Pain, The Physics of vibrations andwaves.
4. Quantum Mechanics-Decker.
5. Ian G. Main, Oscillations and waves inphysics.

References :

1. Engineering Physics, P.K Palanisamy, ScitechPublications.
2. Applied Physics- Dr. N Chandra Shaker and P. AppalNaidu.
3. Applied Physics for Engineers- P. Madhusudana rao, AcademicPublishing Company.
4. Engineering Physics, V. Rajandran, Tata mc. Graw Hill BookPublishers.
5. Introduction to Mechanics — MKVerma.

Outcomes :

1. The student learns about solving engineering solutions employing the quantum mechanicalconcepts.
2. The students learns about the physics of semiconductor materials and along with their applications in science andengineering.
3. The student learns about the construction, working and applications of LASER inengineering.
4. The students get exposure to dielectric and magnetic materials and their engineeringapplications.
5. The students learn about theory of waves and oscillation and mechanics of rigid bodies for engineeringapplications.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J1008) ENGINEERING CHEMISTRY

B.TechI-YearI-Semester **L T P C 3 1 0 4**

Objectives :

1. To achieve the knowledge about various kinds of Orbitals &Splitting patterns.
2. Toknowaboutthewaterqualityanditsparameters,learningtheknowledge in the assessment of water quality andpurification.
3. To achieve the knowledge about various kinds of Electrochemical cells and batteries and corrosionphenomenon.
4. To understand the reactions, mechanism and stereochemistry of organic molecules.
5. Understandtheprinciple,instrumentationandapplicationsofSpectroscopic techniques.

UNIT-I

MolecularstructureandTheoriesofBonding: AtomicandMolecularorbitals. Linear Combination of Atomic Orbitals (LCAO), molecular orbitals of diatomic molecules, molecular orbital energy level diagrams of N_2,O_2 andF_2molecules. πmolecular orbitals of butadiene andbenzene.

Crystal Field Theory (CFT): Salient Features of CFT – Crystal Field Splitting of transition metalion d- orbitals in Tetrahedral, Octahedral and square planar geometries. Band structure of solids and effect of doping on conductance.

UNIT-II

Water and its treatment: Introduction – hardness of water – Causes of hardness - Types of hardness: temporary and permanent – expression and unitsofhardness–Estimationofhardnessofwaterbycomplexometricmethod. Potable water and its specifications. Steps involved in treatment of water – Disinfection of water by chlorination and ozonization. Boiler feed water and its treatment – Calgon conditioning, Phosphate conditioning and Colloidal conditioning.Externaltreatmentofwater–Ionexchangeprocess.Desalination of water – Reverse osmosis. Numericalproblems.

UNIT-III

Electrochemistryandcorrosion: Electrochemicalcells–electrodepotential, standard electrode potential, types of electrodes – calomel, Quinhydrone and glass electrode. Nernst equation Determination of pH of a solution by using quinhydrone and glass electrode. Electrochemical series and its applications. Numericalproblems.Potentiometrictitrations.Batteries–Primary(Lithiumcell) and secondary batteries (Lead – acid storage battery and Lithium ionbattery).

Causes and effects of corrosion – theories of chemical and electrochemical corrosion – mechanism of electrochemical corrosion, Types of corrosion: Galvanic, water-line and pitting corrosion. Factors affecting rate of corrosion, Corrosion control methods- Cathodic protection – Sacrificial anode and impressed current cathodic methods. Surface coatings – metallic coatings – methods of application. Electroless plating of Nickel.

UNIT-IV

Stereochemistry,ReactionMechanismandsynthesisofdrugmolecules: Introductiontorepresentationof3-dimensionalstructures,Structuralandstereoisomers, configurations, symmetry and chirality. Enantiomers, diastereomers, opticalactivity andAbsoluteconfiguration.Conformationalanalysisofn-butane.Substitutionreactions: Nucleophilic substitution reactions: Mechanism of S_N1, S_N2 reactions. Electrophilic and nucleophilic addition reactions: Addition of HBr to propene. Markownikoff and antiMarkownikoff'sadditions.Grignardadditionsoncarbonylcompounds.Elimination reactions: Dehydro halogenation of alkylhalides. Saytzeff rule. Oxidation reactions: Oxidationofalcoholsusing$KMnO_4$andchromicacid.Reductionreactions:reduction of carbonyl compounds using $LiAlH_4$&$NaBH_4$. Hydroboration of olefins. Structure, synthesisandpharmaceuticalapplicationsofParacetamolandAspirin.

UNIT-V

Spectroscopic techniques and applications: Principles of spectroscopy, selection rules and applications of electronic spectroscopy. vibrational and rotational spectroscopy. Basic concepts of Nuclear magnetic resonance Spectroscopy, chemical shift. Introduction to Magnetic resonance imaging.

Text books :

1. TextBookofEngineeringChemistrybyA.Jayashree,Wileypublications,NewDelhi.
2. Engineering Chemistry by P.C. Jain and M. Jain, Dhanpatrai Publishing Company, New Delhi(2010).
3. Text Book of Engineering Chemistry by ShashiChawla.
4. Engineering Chemistry by Rama Devi, Venkata Ramana Reddy and Rath, Cengage learning, New Delhi.(2016).
5. TextBookofEngineeringChemistrybyC.ParameshwaraMurthy.B.S.Publications.
6. Text Book of Engineering Chemistry by Y. Bharathi kumari and Jyotsna Cherikuri, VGSPublications.

Outcomes .5:

1. Studentswillgainthebasicknowledgeofatomicandmolecularorbitals&Splittingpatterns.
2. Theycanunderstandthebasicpropertiesofwateranditsusageindomestic and industrialpurposes.
3. To gain the knowledge about the Electrochemical cells, batteries and corrosionphenomenon.
4. They learn about organic reactions and the stereochemistry of organic molecules.They can predict potential applications of spectroscopy and practicalutilityinordertobecomegoodengineersandentrepreneurs.

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J1301) ENGINEERING MECHANICS

B.TECH. I YEAR –ISEM **L T P C 3 1 0 4**

Course Objectives: The objectives of this course are to

1. Explain the resolution of a system of forces, compute their resultant and solve problems using equations ofequilibrium.
2. Perform analysis of bodies lying on roughsurfaces.
3. Locate the Centroid of a body and compute the area moment of inertia andmassmomentofinertiaofstandardandcompositesections.
4. Explain kinetics and kinematics of particles, projectiles, curvilinear motion, centroidal motion and plane motion of rigidbodies.
5. Explain the concepts of work-energy method and its applications to translation,rotationandplanemotionandtheconceptofvibrations.

UNIT-I :

Introduction to Engineering Mechanics - Force Systems : Basic concepts, Particle equilibrium in 2-D & 3-D; Rigid Body equilibrium; System of Forces, Coplanar Concurrent Forces, Components in Space – Resultant- Moment of ForcesanditsApplication;CouplesandResultantofForceSystem,Equilibrium ofSystemofForces,Freebodydiagrams,EquationsofEquilibriumofCoplanar Systems and Spatial Systems; StaticIndeterminacy.

UNIT-II:

Friction: Typesoffriction,Limitingfriction,LawsofFriction,StaticandDynamic Friction; Motion of Bodies, wedge friction, screw jack & differential screw jack.
Centroid and Centre of Gravity -Centroid of Lines, Areas and Volumes from first principle, centroid of composite sections; Centre of Gravity and its implications. – Theorem ofPappus.

UNIT-III :

Area Moment of Inertia- Definition, Moment of inertia of plane sections from first principles, Theorems of moment of inertia, Moment of inertia of standard sections and composite sections; Product of Inertia, Parallel Axis Theorem, Perpendicular Axis Theorem.

Mass Moment of Inertia : Moment of Inertia of Masses - Transfer Formula for Mass Moments of Inertia – Mass moment of inertia of composite bodies.

UNIT-IV:

Review of particle dynamics- Rectilinear motion; Plane curvilinear motion (rectangular,path,andpolarcoordinates).3-Dcurvilinearmotion;Relativeand constrainedmotion;Newton's2ndlaw(rectangular,path,andpolarcoordinates). Work-kinetic energy, power, potential energy. Impulse-momentum (linear, angular); Impact (Direct andoblique).

UNIT-V:

Kinetics of Rigid Bodies -Basic terms, general principles in dynamics; Types of motion, Instantaneous centre of rotation in plane motion and simple problems; D'Alembert's principle and its applications in plane motion and connected bodies; Work Energy principle and its application in plane motion of connected bodies; Kinetics of rigid body rotation.

TEXT BOOKS :

1. Engg. Mechanics / S.S. Bhavikatti & K.G. Rajasekharappa / Third edition / New age InternationalPublishers.
2. Reddy Vijay Kumar K. and J. Suresh Kumar (2010), Singer's Engineering Mechanics – Statics &Dynamics.

REFERENCE BOOKS :

1. Timoshenko S.P and Young D.H., "Engineering Mechanics", McGraw Hill International Edition,1983.
2. Andrew Pytel, Jaan Kiusalaas, "Engineering Mechanics", Cengage Learning,2014.
3. BeerF.P&JohnstonE.RJr.Vector,"MechanicsforEngineers",TMH,2004.
4. Hibbeler R.C &Ashok Gupta, "Engineering Mechanics", Pearson Education,2010.
5. Tayal A.K., "Engineering Mechanics – Statics &Dynamics", UmeshPublications,2011.
6. Basudeb Bhattacharyya, "Engineering Mechanics", Oxford University Press,2008.
7. Meriam. J. L., "Engineering Mechanics", Volume-II Dynamics, John Wiley & Sons,2008.

Course Outcomes: At the end of the course, graduates will be able to

1. Determine resultant of forces acting on a body and analyse equilibrium of a body subjected to a system offorces.
2. Solve problem of bodies subjected tofriction.
3. Find the location of centroid and calculate moment of inertia of a given section.
4. Evaluate the kinetics and kinematics of a body undergoing rectilinear, curvilinear, rotatory motion and rigid bodymotion.
5. Solve problems using work energy equations for translation, fixed axis rotation and plane motion and solve problems ofvibration.

JAYAMUKHIINSTITUTEOFTECHNOLOGICALSCIENCES
(UGC-AUTONOMOUS)

(J1009) ENGINEERING PHYSICS AND CHEMISTRY LAB

B.TECH. I YEAR –ISEM **L T P C 0**
0 31.5

Objectives :
ThiscourseonPhysicalScienceslabhasbeendesignedwith18experimentsin PhysicsandChemistry.Theobjectiveofthecourseisthatthestudentwillhave exposuretovariousexperimentalskillswhichisveryessentialforanengineering student. The experiments are selected from various areas of physics and chemistry like Physical Optics, Lasers, Fiber optics, waves and oscillations, semiconductors,Electricity,Conductometry,Potentiometry,etc...Thestudentis also exposed to various tools like Screw Gauge, Vernier callipers, Physical balance, Spectrometer, Microscope, Viscometer, and stalagmometer,etc.

PHYSICS LAB (CYCLE-1)
(Any Six Experiments compulsory)
1. DeterminationofEenergygapofsemiconductormaterialofp-njunctiondiode.
2. DeterminationoffrequencyofelectricalvibratorbyusingMelde'sexperiment.
3. Determination of wavelength of LASER byusing diffraction grating.
4. DeterminationofrigiditymodulusofagivenwireusingTorsionalpendulum.
5. R-C circuitanalysis.
6. Determination of Numerical aperture of a given opticalfiber.
7. Determinationoftheradiousofcurvatureofplano-convexlensbyformingNewton'srings.
8. LED-characteristics.

CHEMISTRY LAB (CYCLE -2)
(Any Six Experiments compulsory)
1. DeterminationoftotalhardnessofwaterbycomplexometricmethodusingEDTA.
2. Estimation of an HCl by Conductometrictitrations.
3. Estimation of Acetic acid by Conductometrictitrations.
4. Estimation of HCl by Potentiometrictitrations.
5. Determinationofrateconstantofacidcatalysedhydrolysisofmethylacetate
6. Synthesis of Aspirin andParacetamol.
7. ThinlayerchromatographycalculationofR$_f$values.egorthoandparanitrophenols.
8. Verificationoffreundlichadsorptionisotherm-adsorptionofaceticacidoncharcoal.
9. DeterminationofviscosityofcastoroilandgroundnutoilbyusingOstwald'sviscometer.
10. Determinationofsurfacetensionofagiveliquidusingstalagmometer.

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

JAYAMUKHIINSTITUTEOFTECHNOLOGICALSCIENCES
(UGC-AUTONOMOUS)

(J1303) ENGINEERING WORKSHOP

B.TECH. I YEAR –ISEM **L T P C 1**
0 32.5

Pre-requisites: Practical skill
Course Objectives :
1. To Study of different hand operated power tools, uses and their demonstration.
2. To gain a good basic working knowledge required for the production of various engineeringproducts.
3. To provide hands on experience about use of different engineering materials, tools, equipments and processes those are common in the engineeringfield.
4. To develop a right attitude, team working, precision and safety at work place.
5. It explains the construction, function, use and application of different working tools, equipment andmachines.
6. To study commonly used carpentryjoints.

Demonstration: Plumbing,Powertools:Powerhacksaw,Tablemountedcircular saw, Thickness planer, Bench drillingmachine.

Workshop Practice: (Two exercises are required to perform from each trade)
1. Fitting**.**
2. Carpentry**.**
3. TinSmithy**.**
4. Housewiring**.**
5. BlackSmithy.
6. Foundry.
7. Welding.

Course Outcomes: At the end of the course, the student will be able to:
1. Study and practice on machine tools and theiroperations.
2. Practiceonmanufacturingofcomponentsusingworkshoptradesincluding plumbing, fitting, carpentry and housewiring.
3. Identify and apply suitable tools for different trades of Engineering processesincludingdrilling,materialremoving,measuring,chiseling.
4. Applybasicelectricalengineeringskills forhousewiringpractice.

TEXT BOOKS:
1. Work shop Manual - P. Kannaiah/ K. L. Narayana/SciTech.
2. Workshop Manual / K. Venugopal /Anuradha.

REFERENCE BOOKS :
1. Workshop Practice /B. L. Juneja /Cengage.
2. Workshop Manual / Venkat Reddy/BSP.

JAYAMUKHIINSTITUTEOFTECHNOLOGICALSCIENCES

(UGC-AUTONOMOUS)

(J2002) MATHEMATICS - II

B.TECH. I YEAR –IISEM **L T P C**

3 1 04

Pre-requisites: Mathematical Knowledge at pre-university level

Objectives: The Students able to learn

1. Methodsofsolvingthedifferentialequationsoffirstandhigherorder.
2. Evaluation of multiple integrals and theirapplications.
3. Thephysicalquantitiesinvolvedinengineeringfieldrelatedtovectorvalued functions.
4. The basic properties of vector valued functions and their applications to line, surface and volumeintegrals.

UNIT-I

First Order ODE: Exact, linear and Bernoulli's equations; Applications: Newton's law of cooling, Law of natural growth and decay; Equations not of firstdegree:equationssolvableforp,equationssolvablefory,equationssolvable for x and Clairaut'stype.

UNIT-II

Ordinary Differential Equations of Higher Order: Second order linear differential equations with constant coefficients: Non-Homogeneous terms of thetypee^{ax},sinax,casaxpolynomialsinx,e^{ax}v(x)andxv(x);methodofvariation of parameters; Equations reducible to linear ODE with constant coefficients: Legendre's equation, Cauchy-Eulerequation.

UNIT-III

Multivariable Calculus (Integration): Evaluation of Double Integrals (Cartesianandpolarcoordinates);changeoforderofintegration(onlyCartesian form); Evaluation of Triple Integrals: Change of variables (Cartesian to polar) for double and (Cartesian to Spherical and Cylindrical polar coordinates) for tripleintegrals.Applications:Areas(bydoubleintegrals)andvolumes(bydouble integrals and tripleintegrals).

UNIT-IV

Vector Differentiation: Vector point functions and scalar point functions. Gradient, Divergence and Curl. Directional derivatives, Tangent plane and normal line. Vector Identities. Scalar potential functions. Solenoidal and Irrotational vectors.

UNIT-V

Vector Integration: Line, Surface and Volume Integrals. Theorems of Green, Gauss and Stokes (without proofs) and their applications.

Text Books :

1. B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition,2010.
2. Erwinkreyszig,AdvancedEngineeringMathematics,9th Edition,JohnWiley &Sons,2006.
3. G.B. Thomas and R.L. Finney, Calculus and Analytic geometry, 9th Edition,Pearson, Reprint,2002.

References :

1. Paras Ram, Engineering Mathematics, 2nd Edition, CBSPublishes.
2. S. L. Ross, Differential Equations, 3rd Ed., Wiley India,1984.

Outcomes: After learning the contents of this paper the student must be able to

1. Identifywhetherthegivendifferentialequationoffirstorderisexactornot.
2. Solve higher differential equation and apply the concept of differential equation to real worldproblems.
3. Evaluate the multiple integrals and apply the concept to find areas and volumes.
4. Evaluate the line, surface and volume integrals and converting them from one toanother.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J2011) ENGLISH

B.TECH. I YEAR –IISEM **L T P C 2 0 02**

Introduction :
InviewofthegrowingimportanceofEnglishasatoolforglobalcommunication and the consequent emphasis on training students to acquire language skills, thesyllabusofEnglishhasbeendesignedtodeveloplinguistic,communicative and critical thinking competencies of Engineering students. In English classes, the focus should be on the skills development in the areas of vocabulary, grammar, reading and writing. For this, the teachers should use the prescribed text for detailed study. The students should be encouraged to read the texts leading to reading comprehension and different passages may be given for practice in the class. The time should be utilized for working out the exercises given after each excerpt, and also for supplementing the exercises with authentic materials of a similar kind, for example, newspaper articles, advertisements, promotional material etc. *The focus in this syllabus is on skill development,fosteringideasandpracticeoflanguageskillsinvariouscontexts andcultures.*

Objectives **:** The course will help to

1. Improve the language proficiency of students in English with an emphasis on Vocabulary, Grammar, Reading and Writingskills.
2. Equip students to study academic subjects more effectively and critically usingthetheoreticalandpracticalcomponentsofEnglishsyllabus.
3. Developstudyskillsandcommunicationskillsinformalandinformalsituations.

UNIT –I
'The Raman Effect' from the prescribed textbook 'English for Engineers' published by Cambridge University Press.

Vocabulary Building: The Concept of Word Formation —The Use of Prefixes and Suffixes.

Grammar: Identifying Common Errors in Writing with Reference to Articles and Prepositions.

Reading: Reading and Its Importance- Techniques for Effective Reading.
Basic Writing Skills: Sentence Structures - Use of Phrases and Clauses in Sentences-Importance of Proper Punctuation- Techniques for writing precisely – **Paragraphwriting**–Types,StructuresandFeaturesofaParagraph-Creating Coherence-Organizing Principles of Paragraphs inDocuments.

UNIT –II

'Ancient Architecture in India' from the prescribed textbook 'English for Engineers' published by Cambridge University Press.

Vocabulary: Synonyms and Antonyms.

Grammar: Identifying Common Errors in Writing with Reference to Noun-pronoun Agreement and Subject-verb Agreement.

Reading: Improving Comprehension Skills – Techniques for Good Comprehension.

Writing: Format of a Formal Letter-**Writing Formal Letters** E.g.., Letter of Complaint, Letter of Requisition, Job Application with Resume.

UNIT –III

'Blue Jeans' from the prescribed textbook 'English for Engineers'published by Cambridge University Press.

Vocabulary:AcquaintancewithPrefixesandSuffixesfromForeignLanguages in English to form Derivatives-Words from Foreign Languages and their Use in English.

Grammar: Identifying Common Errors in Writing with Reference to Misplaced Modifiers and Tenses.

Reading: Sub-skills of Reading- Skimming and Scanning.

Writing: Nature and Style of Sensible Writing- **Defining- Describing** Objects, Places and Events – **Classifying**- Providing Examples or Evidence.

UNIT –IV

'What Should You Be Eating' from the prescribed textbook 'English for Engineers' published by Cambridge University Press.

Vocabulary: Standard Abbreviations in English.

Grammar: Redundancies and Clichés in Oral and Written Communication.

Reading: Comprehension**-** Intensive Reading and Extensive Reading.

Writing: Writing Practices--Writing Introduction and Conclusion - Essay Writing-Précis Writing.

UNIT –V

'HowaChineseBillionaireBuiltHerFortune'fromtheprescribedtextbook 'English for Engineers' published by Cambridge University Press.
Vocabulary: Technical Vocabulary and theirusage
Grammar : Common Errors in English.

Reading : Reading Comprehension-Exercises for Practice.

Writing: Technical Reports- Introduction – Characteristics of a Report – Categories of Report Formats- Structure of Reports (Manuscript Format) - Types of Reports - Writing a Report.

Text Books :

1. Sudarshana,N.P.andSavitha,C.(2018).EnglishforEngineers.Cambridge UniversityPress.

References :

2. Swan, M. (2016). Practical English Usage. Oxford UniversityPress.
3. Kumar, S and Lata, P.(2018). Communication Skills. Oxford University Press.
4. Wood, F.T. (2007).Remedial English Grammar.Macmillan.
5. Zinsser, William. (2001). On Writing Well. Harper ResourceBook.
6. Hamp-Lyons, L. (2006).Study Writing. Cambridge UniversityPress.
7. Exercises in Spoken English. Parts I –III. CIEFL, Hyderabad. Oxford UniversityPress.

Outcomes : Students should be able to

1. Use English Language effectively in spoken and writtenforms.
2. Comprehend the given texts and respondappropriately.
3. Communicate confidently in various contexts and differentcultures.
4. Acquire basic proficiency in English including reading and listening comprehension, writing and speakingskills.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(UGC-AUTONOMOUS)

(J2202) BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

B.TECH. I YEAR –IISEM **L T P C 2 1 0 3**

Objectives **:**

1. To understand the concepts of Basis Electrical Engineering parameters, quantities, and networktheorems.
2. To analyze the steady state analysis of AC and DCcircuits.
3. To Study the construction operation and analysis of transformers, DC and ACmachines.
4. To Study the Operational Characteristics of Diodes and RectifierCircuits.
5. To Study the Operational Characteristics of transistor, characteristics and itsapplications.

UNIT- I

Electrical Circuits: Circuits concept, R-L-C Parameters, Voltage and Current sources, Source Transformation, V–I relationship for Passive elements, Kirchoff'sLaws,Networkreductiontechniques–series,parallel,seriesparallel, star/delta transformations, Nodal Analysis, Mesh analysis with DCexcitations.

Network Theorems - Thevenin's, Norton's, Maximum Power Transfer, Superposition, Reciprocity Theorems with DC excitation.

UNIT- II

Single Phase AC Circuits - R.M.S. and Average values, Form Factor, steady state analysis of series, Parallel and Series parallel Combinations of R, L and C with Sinusoidal excitation, concept of reactance, Impedance, Susceptance and Admittance – phase and phase difference, Concept of Power Factor, j-notation, complex and Polar forms of representation.

UNIT- III

D.C.Machines:Constructionalfeatures,MethodsofExcitation,E.M.F.Equation and Applications, Torque development in D.C motor, Characteristics of DC motors,losses,Efficiency,Swinburne'stest,SpeedcontrolofDCShuntmotors.

Single Phase Transformers: Construction and principle of operation, Development of No Load & On Load Phasor diagrams (Basic fundamentals only).

3-Phase Induction Motor: Constructional features, Principle of Operation (Basic fundamentals only).

UNIT- IV

P-N Junction Diode – Qualitative theory of P-N Junction, P-N Junction diode, V-Icharacteristic(ForwardandReverse),Temperaturedependence,Idealversus practical, Static and dynamicresistances.

Rectifiers and Filters - The P-N junction as a rectifier - A Half Wave Rectifier, Ripple Factor, Full Wave Rectifier, Bridge Rectifier, Filters-Inductive and Capacitive with qualitative analysis.

UNIT- V

Bipolar Junction Transistor (BJT) - Construction, Principle of Operation, CB, CE and CCconfigurations.

Junction Field Effect Transistor - Construction, Principle of Operation, V-I Characteristic, Comparison of BJT and FET.

Zener Diode and SCR Devices- Zener diode characteristics, Use of Zener diode as simple regulator, Breakdown Mechanisms in Zener diode, Principle of Operation of SCR.(Basic fundamentalsonly).

***Text Books* :**

1. Electronic Devices and Circuits – R.L.Boylston and Louis Nashelsky, PEI/ PHI, 9th Ed,2006.
2. Engineering circuit analysis- by William Hayt and Jack E. Kemmerly, Mc Graw Hill Company, 6thedition.
3. Electrical Machines – byP.S.Bimbra.

***References* :**

1. Introduction to Electronic Devices and Circuits-Rober T. Paynter, Pearson Education.
2. Electronic Devices and Circuits -- K. Lal Kishore, B.S. Publications, 2ndEdition,2005.
3. Electrical Machines – byJ.B.Gupta.
4 Network Theory by N.C.Jagan & C.Lakshminarayana, B.S.Publications.
5 Network Theory by Sudhakar, Shyam Mohan Palli,TMH.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J2302) ENGINEERING GRAPHICS

B.TECH. I YEAR –IISEM **L T P C 1 0 4 3**

Pre-requisites: Nil
Course objectives :

1. ToUsevariousengineeringdrawinginstrumentsalongwithlearnthebasics of drawings, dimensioning, scales and conic sections like ellipse,parabola andhyperbola.
2. ToLearnprojectionsofpoints,linesandplaneviewedindifferentpositions.
3. To Learn projections of solids and sections of solids in differentpositions.
4. To impart knowledge of development of surfaces and intersections is most useful of real time applications inindustry.
5. Attain the concept of isometric, orthographicprojections.

UNIT – I
Introduction to Engineering Drawing: Principles of Engineering Graphics and their Significance, Conic Sections including the Rectangular Hyperbola – General method only. Cycloid, Epicycloid and Hypocycloid, Scales – Plain & Diagonal.

UNIT- II
Orthographic Projections: Principles of Orthographic Projections – Conventions – Projections of Points and Lines, Projections of Plane regular geometric figures.—Auxiliary Planes.

UNIT – III
Projections of Regular Solids – Auxiliary Views - Sections or Sectional views of Right Regular Solids – Prism, Cylinder, Pyramid, Cone – Auxiliary views – Sections ofSphere.

UNIT – IV
Development of Surfaces of Right Regular Solids – Prism, Cylinder, Pyramid and Cone, Intersection of Solids: Intersection of – Prism vs Prism- Cylinder Vs Cylinder.

UNIT –V
Isometric Projections: Principles of Isometric Projection – Isometric Scale – IsometricViews–Conventions–IsometricViewsofLines,PlaneFigures,Simple and Compound Solids – Isometric Projection of objects having non- isometric lines.IsometricProjectionof SphericalParts.Conversion ofIsometricViews to Orthographic Views and Vice-versa–Conventions.

IntroductiontoCAD:(ForInternalEvaluationWeightageonly): Introduction to CAD Software Package Commands.- Free Hand Sketches of 2D- Creation of 2D Sketches by CADPackage.

TEXTBOOKS :

1. Engineering Drawing N.D. Bhatt /Charotar.
2. Engineering Drawing / N. S. Parthasarathy and Vela Murali/Oxford.

REFERENCE BOOKS :

1. Engineering Drawing / Basant Agrawal and McAgrawal/ McGrawHill.
2. Engineering Drawing/ M. B. Shah, B.C. Rane /Pearson.
3. Computer Aided Engineering Drawing – K Balaveera Reddy et al – CBS Publishers.

Course Outcomes :

1. Select, construct and interpret appropriate drawing scales as per the situation and able to draw simplecurves.
2. Graduates are able to draw orthographic projections of points ,lines and planes.
3. Able to draw the orthographic projections of solids and sections ofsolids.
4. Layout development of solids for practical situations along with able to draw sections ofsolids.
5. Comprehend the isometricprojections.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J2501) PROGRAMMING FOR PROBLEM SOLVING

B.TECH. I YEAR –IISEM **L T P C 3**
1 04

Course Objectives :

1. To introduces the basics of computers and informationtechnology.
2. To educate problem solvingtechniques.
3. To impart programming skills in Clanguage.
4. To practice structured programming to solve real lifeproblems.
5. To study the concepts of Assembler, Macro Processor, Loader andLinker.

UNIT-I

History and Classifications of Computers – Components of a Computer – Working Principle of Computer – Hardware – Software and its Types – Applications of Computers –Network and its Types – Internet and its services – Intranet– Extranet – Generations of Programming Languages Introduction to NumberSystem.

UNIT-II

Problem solving techniques – Program development life-cycle – Algorithm – Complexities of Algorithm – Flowchart – Pseudo code. Introduction to C –C Program Structure – C tokens: Keyword, Identifiers, Constants, Variable, Data types (simple and user-defined) – Operators and its types – Operator Precedence – Expression Evaluation – Type Conversion – Input/outputoperations.

UNIT-III

Branching Statements – Looping Statements – Arrays – Multidimensional arrays. Functions: Function Prototype, Passing Arguments to Function – Call by Value and Call by Reference – Nested function call – Library Functions – User-defined Functions – Recursion. Strings – String I/O functions, String Library functions – Storage classes.

UNIT-IV

Structures–ArraysandStructures–Nestedstructures–StructureasArgument tofunctions–UnionPointers–Declaration,InitializationandAccessingPointer variable – Pointers and arrays – pointers as argument and return value – Pointers and strings - pointers andstructures.

UNIT-V

Introduction to File Concepts in C – File types – I/O operations on files – File modes–Randomaccesstofiles–Commandlinearguments.DynamicMemory

Allocation: MALLOC, CALLOC, FREE, REALLOC Introduction to preprocessor – Macro substitution directives – File inclusion directives –Compiler Control directives – Miscellaneousdirectives.

Text Books :

1. J.B.Dixit,“ComputerFundamentalsandProgramminginC”,FirewallMedia, 2009.
2. Balagurusamy.E,“ProgramminginANSIC”,TataMcGrawHill,Sixthedition, 2012.

Reference Books :

1. Ashok N Kamthane, “Computer Programming”, Pearson education, Second Impression, 2008. 2.Venugopal.K and Kavichithra.C, “Computer Programming”, New Age International Publishers, First Edition, 2007.
3. Byron S Gottfried, “Programming with C”, Schaum’s Outlines, Second Edition, Tata McGraw-Hill,2006.
4. Dromey R.G., “How to Solve it by Computer”, Pearson Education, Fourth Reprint,2007.
5. Kernighan,B.W and Ritchie,D.M, “The C Programming language”, Second Edition, Pearson Education,2006.

Course Outcomes :

1. Know the fundamentals ofcomputers.
2. Uunderstand applying logical skills for problemsolving.
3. Learn C programming languageconcepts.
4. Apply C programming language concepts for problemsolving.
5. Gain knowledge in using memory management techniques in programming.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J2502) PROGRAMMING FOR PROBLEM SOLVING LABORATORY

B.TECH. I YEAR –IISEM **L T P C 0**
0 31.5

Course Objectives :

1. To study and understand the use of OScommands.
2. To expose the undergraduate students to the practical implementation of C Programmingconcepts.
3. To improve students capability in applying C Programming for problem solving.
4. To make students use effective memory management techniques in programming.
5. To expose students to modular programming concepts in problemsolving.

LIST OF EXPERIMENTS :

Week 1 : Study of OS commands.

Week 2 : Study of Compilation and execution of simple C programs.

Week 3 : Basic C Programs.

a. ArithmeticOperations.
b. Area and Circumference of acircle.
c. Swapping with and without TemporaryVariables.

Week 4 : Programs using Branching statements

a. To check the number as Odd orEven.
b. Greatest of ThreeNumbers.
c. CountingVowels.
d. Grading based on Student'sMark.

Week 5 : Programs using Control Structures

a. Computing Factorial of anumber.
b. Fibonacci Seriesgeneration.
c. Prime NumberChecking.
d. Computing Sum ofDigit.

Week 6 : Programs using String Operations

a. PalindromeChecking.
b. Searching and SortingNames.

Week 7 : Programs using Arrays.

Week 8 : Programs using Functions.

a. ComputingnCr.
b. Factorial usingRecursion.
c. Call by Value and Call byReference.

Week 9 : Programs using Structure

a. Student InformationSystem.
b. Employee Pay SlipGeneration.
c. Electricity BillGeneration.

Week 10 : Programs using Pointers

a. Pointer andArray.
b. Pointer tofunction.
c. Pointer toStructure.

Week 11 : Programs using File Operation

a. Counting No. of Lines, Characters and BlackSpaces.
b. Content copy from one file toanother.
c. Reading and Writing Data inFile.

Text Books:

1. J.B.Dixit,“ComputerFundamentalsandProgramminginC”,FirewallMedia, 2009.
2. Balagurusamy.E,“ProgramminginANSIC”,TataMcGrawHill,Sixthedition, 2012.

Course Outcomes :

1. Learn practical implementation of C programming languageconcepts.
2. Debug and document programs inC.
3. Know usage of logical skills in developing Cprograms.
4. Apply effective memory management techniques for problemsolving.
5. Understand the file managementtechniques.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J2203) BASIC ELECTRICAL ANDELECTRONICSENGINEERINGLAB

B.TECH. I YEAR –IISEM **L T P C 0 0 31.5**

List of Experiments :

1. Verification of Kirchhoff'sLaws.
2. Verification of superposition and ReciprocityTheorems.
3. Verification of Maximum Power transfertheorem.
4. Experimental Determination of Thevenin'stheorem.
5. Magnetization characteristics of DC ShuntGenerator.
6. Swinburne's Test on DC shuntmachine.
7. Brake test on DC shuntmotor.
8. OC & SC tests on single phasetransformer.
9. PN Junction Diode characteristics (Forward bias, Reversebias).
10. Zener DiodeCharacteristics.
11. Transistor CE Characteristics (Input andOutput).
12. Rectifier without filters (Full wave & Halfwave).
13. Rectifier with filters (Full wave & Halfwave).

Note: Student should perform 11 experiments out of 13 experiments. Experiments 7 & 8 are optional.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J2012) ENGLISH LANGUAGE COMMUNICATION SKILLS LAB

B.TECH. I YEAR –IISEM **L T P C**
0 0 21

The **Language Lab** focuses on the production and practice of sounds of language. It familiarizes the students with the use of English in everyday situations both in formal and informal contexts.

Objectives:

1. To facilitate computer-assisted multi-media instruction enabling individualized and independent languagelearning.
2. To sensitize the students to the nuances of English speech sounds, word accent, intonation andrhythm.
3. To bring about a consistent accent and intelligibility in students' pronunciationofEnglishbyprovidinganopportunityforpracticeinspeaking
4. To improve the fluency of students in spoken English and neutralize their mother tongueinfluence.
5. To train students to use language appropriately for public speaking, group discussions andinterviews.

The language Lab shall have two parts :

Computer Assisted Language Learning (CALL) Lab.

Interactive Communication Skills (ICS) Lab.

Listening Skills :

Objectives :

1. To enable students to develop their listening skill so that they may appreciate its role in the LSRW skills approach to language and improve theirpronunciation.
2. To equip students with necessary training in listening, so that they can comprehendthespeechofpeopleofdifferentbackgroundsandregions.
3. Studentsshouldbegivenpracticeinlisteningtothesoundsofthelanguage to be able to recognize them, to distinguish between them to mark stress and recognize and use the right intonation insentences.
4. Listening for generalcontent.
5. Listening to fill upinformation.
6. Intensivelistening.
7. Listening for specificinformation.

Speaking Skills :

Objectives :

1. To make students aware of the role of speaking in English and its contribution to theirsuccess.
2. To enable students to express themselves fluently and appropriately in social and professionalcontexts.
3. Oralpractice.
4. Describingobjects/situations/people.
5. Roleplay.
6. Just A Minute (JAM)Sessions.

Reading Skills :

Objectives :

1. To develop an awareness in the students about the significance of silent reading andcomprehension.
2. To develop the ability of students to guess the meanings of words from contextandgrasptheoverallmessageofthetext,drawinferencesetc.
3. Skimming and Scanning thetext.
4. Understanding the gist of anargument.
5. Identifying the topicsentence.
6. Inferring lexical and contextualmeaning.
7. Understanding discoursefeatures.

Note*:Thestudentswillbetrainedinreadingskillsusingtheprescribedtextfor detailedstudy.Theywillbeexaminedinreadingandansweringquestionsusing ‘unseen’passageswhichmaybetakenfromauthentictexts,suchasmagazines/ newspaperarticles.*

Writing Skills :

Objectives:

1. To develop an awareness in the students about writing as an exact and formalskill.
2. To equip them with the components of different forms of writing, beginning with the lower order ones. Writingsentences.
3. Use of appropriatevocabulary.
4. Paragraphwriting.
5. Coherence andcohesiveness.
6. Narration /description.
7. NoteMaking.
8. Formal and informal letter writing.
9.

The following course content is prescribed for the Lab.

Exercise – I

CALL Lab:

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

Practice: Introduction to Phonetics – Speech Sounds – Vowels and Consonants.

ICS Lab :

Understand: Communication at Work Place- Spoken vs. Written language.
Practice: Ice-Breaking Activity and JAM Session- Situational Dialogues – Greetings – Taking Leave – Introducing Oneself and Others.

Exercise – II

CALL Lab:

Understand: Structure of Syllables – Word Stress and Rhythm– Weak Forms and Strong Forms in Context.

Practice: Basic Rules of Word Accent - Stress Shift - Weak Forms and Strong Forms in Context.

ICS Lab :

Understand: Features of Good Conversation – Non-verbal Communication.

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

Exercise - III

CALL Lab:

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

Practice: Common Indian Variants in Pronunciation – Differences in British and AmericanPronunciation.

ICS Lab:

Understand: How to make Formal Presentations.

Practice: Formal Presentations.

Exercise – IV

CALL Lab :

Understand: Listening for General Details.

Practice: Listening Comprehension Tests.

ICS Lab:

Understand: Public Speaking – Exposure to Structured Talks.
Practice: Making a Short Speech – Extempore.

Exercise – V

CALL Lab:

Understand: Listening for Specific Details.

Practice: Listening Comprehension Tests.

ICS Lab:

Understand: Interview Skills.

Practice: Mock Interviews.

Minimum Requirement of infrastructural facilities for ELCS Lab :

1. ComputerAssistedLanguageLearning(CALL)Labhastoaccommodate 40studentswith40systems,withoneMasterConsole,LANfacilityandEnglish language learning software for self- study bystudents.

System Requirement (Hardware component):

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

i) Computers with SuitableConfiguration.

ii) High FidelityHeadphones.

2. Interactive Communication Skills (ICS) Lab: A Spacious room with movable chairs and audio-visual aids with a Public-Address System, a LCD and a projectoretc.

Lab Manuals :

1. ELCS Lab Manual – A Workbook for CALL and ICS Lab Activities. Hyderabad, Orient Black Swan Pvt. Ltd. 2016.Print.
2. Hart, Steve. Nair, Aravind R. and Bhambhani, Veena. EMBARK- English for Undergraduates. Delhi. Cambridge University Press. 2016.Print.

Suggested Software :

1. Cambridge Advanced Learner's dictionary with CD,Fourth edition.
2. Oxford Advanced Learner's Compass, 8th Edition, withCD.
3. Hancock, Mark. English Pronunciation in Use: Intermediate. United Kingdom. Cambridge University Press,2007.
4. TOEFL & GRE (KAPLAN, AARCO & BARRONS, USA, Cracking GRE by CLIFFS).

References:

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

***Outcomes*:** Students will be able to attain

1. BetterunderstandingofnuancesofEnglishlanguagethroughaudio-visual experience and groupactivities.
2. Neutralization of accent for intelligibility Speaking skills with clarity and confidence which in turn enhances theiremployability skills.

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J3005) PROBABILITY DISTRIBUTION & COMPLEX VARIABLES

B.TECH. II YEAR –ISEM **L T P C**
3 1 0 4

Pre-requisites: Mathematical Knowledge at pre-university level.

Objectives :
To learn

- The ideas of probability and random variables and various discrete and continuous probability distributions and theirproperties.
- The basic ideas of statistics including measures of central tendency, correlation andregression.
- The statistical methods of studying datasamples.
- Differentiation and integration of complex valuedfunctions.
- Evaluation of integrals using Cauchy's integral formula and Cauchy's residuetheorem.
- Expansion of complex functions using Taylor's and Laurent'sseries.

UNIT-I:
Basic Probability: Probability spaces, conditional probability, independent events,andBayes'theorem.Randomvariables:Discreteandcontinuousrandom variables, Expectation of Random Variables, Variance of random variables.

UNIT-II:
Probability distributions: Binomial, Poisson, evaluation of statistical parameters for these distributions, Poisson approximation to the binomial distribution. Continuous random variables and their properties, distribution functionsanddensityfunctions,Normalandexponential,evaluationofstatistical parameters for thesedistributions.

UNIT-III:
Testing of Hypothesis: Test of significance: Basic of testing of Hypothesis. Null and alternate Hypothesis, types of errors, level of significance, critical region.Largesampletestforsingleproportion,differenceofproportions,single mean,differenceofmeans;smallsampletests:Testforsinglemean,difference of means and test for ratio ofvariances.

UNIT-IV:
Complex Variables (Differentiation): Limit, Continuity and Differentiation of Complex functions, Analyticity, Cauchy-Riemann equations (without proof), finding harmonic conjugate; elementary analytic functions (exponential, trigonometric, logarithm) and their properties.

UNIT-V:

Complex Variables (Integration): Line integral, Cauchy's theorem, Cauchy's Integral formula, Zeros of analytic functions, Singularities, Taylor's series, Laurent's series; Residues, Cauchy Residue theorem, Conformal mappings, Mobius transformations and their properties.

Course outcomes :

After learning the contents of this paper the student must be able to

- Formulate and solve problems involving random variables and apply statistical methods for analysing experimental data.
- Analysethecomplexfunctionwithreferencetotheiranalyticity,integration using Cauchy's integral and residuetheorems.
- Taylor's and Laurent's series expansions of complexfunction.

Text Books :

1. B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 35th Edition,2010.
2. Ronald E. Walpole, Raymond H. Myers, Sharon L. Myers, keying Ye, Probability and statistics for engineers and scientists, 9th Edition, Pearson Publications.
3. J. W. Brown and R. V. Churchill, Complex Variables and Applications, 7th Ed., Mc-Graw Hill,2004.

References :

1. FundamentalsofMathematicalStatistics,KhannaPublications,SCGuptha and V.K.Kapoor.
2. Miller and Freund's, Probability and Statistics for Engineers, 8th Edition, PearsonEducations.
3. S. Ross, A First Course in Probability, 6th Ed., Pearson Education India, 2002.
4. Erwin kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley&Sons,2006.N.P.BaliandManishGoyal,AtextbookofEngineering Mathematics, LaxmiPublications, Reprint,2010.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(UGC-AUTONOMOUS)

(J3305) ENGINEERING THERMODYNAMICS

B.TECH. II YEAR –ISEM **L T P C 3 0 03**

COURSE OBJECTIVES :

1. To learn about work and heat interactions, balance of energy between system and its surroundings and to learn about application of First law to various energy conversiondevices.
2. To illustrate the difference between high grade and low grade energies and II law Limitations on energyconversion.
3. To evaluate the concepts of entropy, availability andirreversibility.
4. To analyze the changes in properties of substances in various processes and to demonstrate the psychrometric properties and processes used in airconditioning.
5. To analyze the working of different gas and vapour powercycles.

UNIT-I

FUNDAMENTAL CONCEPTS: Fundamentals - System & Control volume; Property,State&Process;Exact&Inexactdifferentials;Work-Thermodynamic definition of work; examples; Displacement work; Path dependence of displacement work and illustrations Temperature, Definition of thermal equilibrium and Zeroth law; Temperature scales; Various Thermometers- Definition of heat; examples of heat/work interaction in systems. First Law for Cyclic & Non-cyclic processes; Concept of total energy, Internal energy and Enthalpy.

FIRST LAW OF THERMODYNAMICS:

First Law for Flow Processes - Derivation of general energy equation for a control volume; Steady state steady flow processes including throttling; Examples of steady flow devices; Unsteady processes; examples of steady and unsteady first law applications for system and control volume.

UNIT-II

SECOND LAW OF THERMODYNAMICS: Second law - Definitions of direct and reverse heat engines; Definitions of thermal efficiency and COP; Kelvin-Planck and Clausius statements; Definition of reversible process; Internal and external irreversibility; Carnot cycle; Absolute temperature scale. Heat engine, Heat pump and Refrigerator.

UNIT-III

ENTROPY: Clausius inequality; Definition of entropy; Demonstration that entropy is a property; Evaluation of entropy for solids, liquids, ideal gases and ideal gas mixtures undergoing various processes; Determination entropy from steam tables- Principle of increase of entropy; Illustration of processes in T-S coordinates.

AVAILABILITY AND IRREVERSIBILITY:Available energy referred to a cycle, decrease in available energy, and available energy from a finite source, maximum work in a reversible process, reversible work by an open system, deadstate,availability,availabilityinasteadyflowprocessandnonflowprocess. Irreversibility and Gouy-Stodola theorem and its applications, second law efficiency.

UNIT-IV

PURESUBSTANCE: PureSubstances,p-V-T-surfaces,T-Sandh-sdiagrams, Mollier Charts, Phase Transformations –Triple point at critical state properties during change of phase, Dryness Fraction. Mollier charts –Various Thermodynamic processes and energy transfer – SteamCalorimetry.

PSYCHROMETRIC PROPERTIES – Dry bulb Temperature, Wet Bulb Temperature,DewpointTemperature,ThermodynamicWetBulbTemperature, Specific Humidity, Relative Humidity, saturated Air, Vapour pressure, Degree ofsaturation–AdiabaticSaturation,Carrier'sEquation–Psychrometricchart.

UNIT-V

GASPOWERCYCLES: Otto,Diesel,Brayton,DualCombustioncycles,Stirling Cycle, Atkinson Cycle, Ericsson Cycle, Lenoir Cycle–Description and representation on P–V and T-S diagram, Thermal Efficiency, Mean Effective Pressures on Air standard basis – comparison ofCycles.

VAPOUR POWER CYCLES: Basics of Carnot cycle, Rankine cycle and comparison of Carnot and Rankine cycle.

TEXT BOOKS :

1. Engineering Thermodynamics / PK Nag/TMH.
2. Sonntag, R. E, Borgnakke, C. and Van Wylen, G. J., 2003, 6th Edition, Fundamentals of Thermodynamics, John Wiley andSons.
3. Thermodynamics – An Engineering Approach – Yunus Cengel & Boles TMH.

REFERENCE BOOKS :

1. Gupta C.P. & Prakash.R. Engineering Thermodynamics, Nem Chand & Brothers,Roorkee.
2. MathurM.LandMehtaF.S,ThermalEngineering,JainBrothers,NewDelhi.
3. DSKumar,ThermalscienceandEngineering,SKKatariaandsons,New Delhi.
4. Jones, J. B. and Duggan, R. E., 1996, Engineering Thermodynamics, Prentice-Hall ofIndia.

5. Moran, M. J. and Shapiro, H. N., 1999, Fundamentals of Engineering Thermodynamics, John Wiley andSons.

6. Engineering Thermodynamics/ ERathakrishnan/PHI.

COURSE OUTCOMES :

1. Thegraduateswillbeabletoapplyenergybalancetosystemsandcontrol volumes, in situations involving heat and work interactions along with will beabletoevaluatetheperformanceofenergyconversiondevices.
2. Ability to define the entropy, available energy andirreversibility.
3. The graduates will be able to differentiate between high grade and low gradeenergies.
4. Graduates can evaluate changes in thermodynamic properties of substances and able to demonstrate the psychrometric properties and processes used in airconditioning.
5. Comprehendthebasicworkingsofgasandvapourpowercycles.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J3306)MECHANICS OF SOLIDS

B.TECH. II YEAR –ISEM **L T P C 3 0 03**

COURSE OBJECTIVES: the Graduates will be able to learn

1. Basicconceptsofstress,strainandtheirrelationsbasedonlinearelasticity. Materialbehaviorsduetodifferenttypesofloadingwillbediscussed.
2. Analyze how to calculate stresses and deformation of a bar due to an axial loading under uniform and non-uniformconditions.
3. Howtodevelopshear-momentdiagramsofabeamandfindthemaximum moment/shear and theirlocations.
4. Various problems in normal and shearstresses.
5. Concepts of Torsion of Circular Shafts and Thin Cylinders problems**.**

UNIT –I

Simple Stresses & Strains: Elasticity and plasticity – Types of stresses & strains–Hooke's law– stress – strain diagram for mild steel – Working stress – Factor of safety – Lateral strain, Poisson's ratio & volumetric strain – Elastic moduli & the relationship between them – Bars of varying section – composite bars – Temperature stresses. Strain energy – Resilience – Gradual, sudden, impact and shock loadings.

UNIT – II

Shear Force and Bending Moment : Definition of beam – Types of beams – Concept of shear force and bending moment – S.F and B.M diagrams for cantilever, simply supported and overhanging beams subjected to point loads, u.d.l., uniformly varying loads and combination of these loads – Point of contra flexure – Relation between S.F., B.M and rate of loading at a section of a beam.

UNIT – III

Flexural Stresses : Theory of simple bending – Assumptions – Derivation of bendingequation:M/I=f/y=E/RNeutralaxis–Determinationbendingstresses – section modulus of rectangular and circular sections (Solid and Hollow), I,T, AngleandChannelsections–Designofsimplebeamsections.

ShearStresses: Derivationofformula–Shearstressdistributionacrossvarious beams sections like rectangular, circular, triangular, I,T angle sections.

UNIT – IV

PrincipalStressesandStrains: Introduction–Stressesonaninclinedsection ofabarunderaxialloading–compoundstresses–Normalandtangential stresses on an inclined plane for biaxial stresses – Two perpendicular normal stresses accompanied by a state of simple shear.

Mohr's circle of stresses – Principal stresses and strains – Analytical and graphicalsolutions.TheoriesofFailure:Introduction–Varioustheoriesoffailure - Maximum Principal Stress Theory, Maximum Principal Strain Theory, Strain Energy and Shear Strain Energy Theory (Von Mises Theory).

UNIT – V

Torsion of Circular Shafts : Theory of pure torsion – Derivation of Torsion equations : T/J= q/r = C θ/L – Assumptions made in the theory of pure torsion – Tensionalmomentofresistance–Polarsectionmodulus–Powertransmitted by shafts – Combined ending and torsion and end thrust – Design of shafts according to theories offailure**.**

Thin Cylinders: Thin seamless cylindrical shells – Derivation of formula for longitudinal and circumferential stresses – hoop, longitudinal and volumetric strains – changes in dia, and volume of thin cylinders– Thin spherical shells.

TEXT BOOKS :

1. Strength of materials – R.S. Kurmi andGupta.
2. Strength of Materials by R.K Rajput, S. Chand & CompanyLtd.
3. Strength of Materials – Ryder. G.H.; Macmillan Long ManPub.
4. .Strength of Materials – W.A. Nash,TMH.

REFERENCE BOOKS :

1. Strength of Materials -By Jindal, UmeshPublications.
2. Analysis of structures by Vazirani andRatwani.
3. MechanicsofStructuresVol–IbyH.J.ShahandS.B.Junnarkar,Charotar Publishing House Pvt.Ltd.
4. StrengthofMaterialsbyD.SPrakashRao,UniversitiesPressPvt.Ltd.
5. StrengthofMaterialsbyS.S.Rattan,TataMcGrawHillEducationPvt.Ltd.
6. FundamentalsofSolidMechanicsbyM.L.Gambhir,PHILearningPvt.Ltd.

COURSE OUTCOMES :

1. Analyze the behavior of the solid bodies subjected to various types of loading;
2. Apply knowledge of materials and structural elements to the analysis of simplestructures;
3. Undertake problem identification, formulation and solution using a range of analyticalmethods.
4. Analyze and interpret laboratory data relating to behavior of structures and the materials they are made of, and undertake associated laboratory work individually and inteams.
5. Expectation and capacity to undertake lifelonglearning.

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J3307) MATERIAL SCIENCEANDMETALLURGY **B.TECH. II YEAR –ISEM L TP C 3 0 03**

COURSE OBJECTIVES :

1. To acquire knowledge on structure of metals andalloys.
2. To learn the concepts of equilibrium diagram and ferrousmaterials
3. To be able to apprehend the basic concepts of Steels and castirons.
4. Toanalyzetheconceptsofmechanicalworkingprocessandheattreatment.
5. Toacquirethebasicconceptsonnon-ferrousandcompositematerials.

UNIT – I

STRUCTURE OF METALS: Crystal structures-Body Centered Cubic, Face CenteredCubic,closedpackedhexagonal,crystallographicplanes.Mechanism of crystallization of metals, grain and grain boundaries, Effect of grain boundariesonthepropertiesofmetal/alloys–Determinationofgrainsize.

CONSTITUTIONOFALLOYS: Necessityofalloying,Solidsolutions-Interstitial SolidSolutionandSubstitutionSolidSolution,HumeRotherysrules.

UNIT - II

EQUILIBRIUM DIAGRAMS: Experimental methods of construction of equilibrium diagrams, Classification of equilibrium diagrams isomorphous, eutectic, partial eutectic equilibrium diagrams. Equilibrium cooling and heating of alloys, lever rule. Transformations in the solid state – allotropy, eutectic, eutectoid,peritectoidreactions.StudyofCu-NiandBi-Cdequilibriumdiagrams.

FERROUS METALS AND ALLOYS: Study of Iron-Iron carbide equilibrium diagram.

UNIT -III

STEELS: Classification of steels, structure, properties and applications of plain carbon steels- low carbon steel, medium carbon steel and high carbon steel.

CAST IRONS: structure, properties and applications of white cast iron, malleable cast iron, gray cast iron, spheroidal graphite cast iron.

UNIT – IV

HEAT TREATMENT OF ALLOYS: Annealing, Normalizing and Hardening. Construction of TTT diagram for eutectoid steel. Hardenability-determination of hardenability by Jominy End quench test. Surface - hardening methods and age hardening treatment andapplication.

NON-FERROUS METALS AND ALLOYS: structure, properties and applications of copper and its alloys, Aluminium and its alloys.

UNIT - V

COMPOSITE MATERIALS: Classification of composites, various methods of component manufacture of fiber reinforced composites-Hand layup process, Filament winding process, SMC processes, Continuous pultrusion processes, Resintransfermoulding.IntroductiontoMetalCeramicMixtures,Metal–Matrix composites and C – C composites andapplications.

TEXT BOOKS :

1. Material Science andMetallurgy/kodgire.
2. V. Raghavan, Materials Science and Engineering, Prentice Hall of India, NewDelhi
3. Sidney H. Avener, Introduction to Physical Metallurgy, Tata McGraw-Hill, 3rdEdition,2011.

REFERENCE BOOKS :

1. Richard A.Flinn, Paul K.Trojan, Engineering Materials and Their Applications, Jaico Publishing House, 4thEdition,1999.
2. Williamandcallister,MaterialsScienceandengineering,WileyIndiaprivate Ltd.,2011.
3. U.C Jindal and Atish Mozumber ,Material since andmetallurgy.

COURSE OUTCOMES :

1. Estimatethepropertiesofthematerialbasedoncrystalstructures.
2. Develop the equilibrium diagram for any binarysystem.
3. DeterminethepropertiesofsteelsbasedonFe-Fe_3Cequilibriumdiagram.
4. Applytheprincipleofheattreatmenttogetdesiredpropertiesinmaterials.
5. Distinguish between non ferrous metals and compositematerials.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J3309)MECHANICS OF FLUIDS &HYDRAULICMACHINERY

B.TECH. II YEAR –ISEM **L T P C 3 1 0 4**

COURSE OBJECTIVES :

1. Identifyandobtainvaluesoffluidpropertiesandrelationshipbetweenthem.
2. Abletostatetheprinciplesofcontinuity,momentum,andenergyasapplied tofluidmotion,andtoidentifyvarioustypesofflows.
3. Abletoexplainboundarylayerconceptsandflowthroughpipes.
4. Describe the operating characteristics of hydraulic machinery (pumps and turbines) and the factors affecting their operation and specifications, as well as their operation in asystem.
5. To analyze the flow in water pumps and understand the functioning and characteristic curves ofpumps.

UNIT-I

FLUID STATICS: Dimensions and units: physical properties of fluids- specific gravity, viscosity, surface tension- vapor pressure and their influence on fluid motion. atmospheric gauge and vacuum pressure–measurement of pressure- Piezometer, U-tube and differential manometers.

UNIT-II

FLUID KINEMATICS: Stream line, path line and streak lines and stream tube, classification of flows- steady & unsteady, uniform, non uniform, laminar, turbulent, rotational, and irrotational flows- equation of continuity for one dimensional flow and three dimensional flow.

FLUIDDYNAMICS: Surfaceandbodyforces–Euler'sandBernoulli'sequations for flow along a stream line, momentum equation and its application on force on pipebend.

UNIT-III

BOUNDARY LAYER CONCEPTS: Definition, thickness, characteristics along thin plate, laminar and turbulent, boundary layers (No derivation) boundary layer in transition, separation of boundary layer, submerged objects – drag andlift.

CLOSEDCONDUITFLOW: Reynolds'sexperiment-DarcyWeisbachequation- Minor losses in pipes- pipes in series and pipes in parallel- total energy line- hydraulic gradient line. Measurement of flow: pitot tube, venturi meter, and orifice meter, Flow nozzle, Turbine flowmeter.

UNIT-IV

BASICS OF TURBO MACHINERY: Hydrodynamic force of jets on stationary and moving flat, inclined, and curved vanes, jet striking centrally and at tip, velocity diagrams, workdone and efficiency, flow over radial vanes. Hydraulic Turbines:Classificationofturbines,impulseandreactionturbines,Peltonwheel, FrancisturbineandKaplanturbine-workingproportions,workdone,efficiencies, hydraulic design – draft tube theory- functions and efficiency. Performance of hydraulic turbines: Geometric similarity, Unit and specific quantities, characteristic curves, governing of turbines, selection of type of turbine, Cavitation, surge tank, waterhammer.

UNIT-V

CENTRIFUGAL PUMPS: Classification, working, work done – manometer head- losses and efficiencies specific speed- pumps in series and parallel-performance characteristic curves, NPSH.

RECIPROCATING PUMPS: Working, Discharge, slip, indicator diagrams.

TEXT BOOKS:

1. V.L.Streeter, Fluid Mechanics, McGraw-Hill book Company, NewYork.
2. S.W.Yuan,FoundationofFluidMechanics,PrenticeHallofIndia,NewDelhi.
3. Modi and Seth, Hydraulics and Fluid Mechanics, Standard Book House, NewDelhi.
4. R.K. Rajput, “Fluid Mechanics &Hydraulic Machines”, S.Chand & Co.Ltd.,NewDelhi.

REFERENCE BOOKS :

1. S.M.Yahya, Fundamentals of Compressible flow, Wiley EasternLtd.
2. Fluid Mechanics and Fluid Power Engineering by D.S. Kumar, Kotaria & Sons.
3. Fluid Mechanics and Machinery by D. Rama Durgaiah, New Age International.
4. Hydraulic Machines by Banga & Sharma, KhannaPublishers.

COURSE OUTCOMES :

1. Ability to identify and obtain the values of fluid properties and relationship betweenthem.
2. Ability to define the principles of continuity, momentum, and energy as applied to fluidmotions.
3. Ability to recognize the basics of hydraulic machinery and their operation design in water distributionsystems.
4. Ability to select and analyze an appropriate turbine with reference to given situation in powerplants.
5. Graduates will be able to evaluate the performance ofpumps.

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J3308) MATERIAL TESTING AND METALLURGY LAB

B.TECH. II YEAR –ISEM **L T P C 0 0 31.5**

COURSE OBJECTIVES :

1. To determine the various mechanical properties of materials under different loadingconditions.
2. To predict the behavior & properties of various materials by observing themicrostructure.

List of Experiments :

(a) Material testing

Any six experiments may be conducted

1. Compression test on helicalspring.
2. Tensiontest.
3. Double sheartest.
4. Torsiontest.
5. Impacttest.
a) Izodtest.
b) Charpytest.
6. Hardnesstest.
a) Rockwell Hardnesstest.
b) Brinell Hardnesstest.
7. Deflection test onbeams.
a) CantileverBeam.
b) Simply Supportedbeam.
8. Compression test on brittlematerials.

(b) Metallurgylab

Any six experiments may be conducted

1. Preparationandstudyofthemicrostructureofpuremetalslikelron,CuandAl.
2. Preparationandstudyofthemicrostructureoflowcarbonsteels,medium carbon steel and high carbonsteels.
3. Studyofthemicrostructuresofgraycastiron,malleablecastironandnodularcastiron.
4. Study of the microstructures ofbrass.
5. Study of the microstructures of heat treatedsteels.
6. Hardenability of steels by Jominy end quenchtest.
7. Hardness of various treated and untreatedsteels.

COURSE OUTCOMES :

Analyze and design machine/structural members subjected to tension, compression, torsion by computing the allowable stresses.

1. To select material for a practicalapplication.
2. Estimate the properties from the microstructure ofmaterials.

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J3310) MECHANICS OF FLUIDS &HYDRAULIC MACHINERY LAB

B.TECH. II YEAR –ISEM **L T P C**
0 0 3 1.5

Prerequisite Subject: Mechanics of Fluids &Hydraulic Machinery

COURSE OBJECTIVES :

1. To state the basic principles of fluidmechanics.
2. To identify various types offlows.
3. To define boundary layer concepts and flow throughpipes.
4. To evaluate the performance of hydraulicturbines.
5. To gain knowledge on the functioning and characteristic curves ofpumps.

LIST OF EXPERIMENTS :

1. Impact of jets onVanes.
2. Performance Test on PeltonWheel.
3. Performance Test on FrancisTurbine.
4. Performance Test on KaplanTurbine.
5. Performance Test on Single Stage CentrifugalPump.
6. Performance Test on Multi Stage CentrifugalPump.
7. Performance Test on ReciprocatingPump.
8. Calibration ofVenturimeter.
9. Calibration of Orificemeter.
10. Determination of friction factor for a given pipeline.
11. Determinationoflossofheadduetosuddencontractioninapipeline.
12. Verification of Bernoulli'stheorem.

COURSE OUTCOMES :

1. Abilitytoexplaintheeffectoffluidpropertiesonaflowsystem.
2. Abilitytoidentifytypeoffluidflowpatternsanddescribecontinuityequation.
3. Ability to analyze a variety of practical fluid flow and measuring devices and utilize fluid mechanics principles indesign.
4. Ability to select and analyze an appropriate turbine with reference to given situation in powerplants.
5. Ability to estimate performance parameters of a given Centrifugal and Reciprocatingpump.and impove

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(JMC01) ENVIRONMENTAL SCIENCE

B.TECH. II YEAR –ISEM **L T P C 3 0 00**

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 andregulations.

UNIT –I

Human Environment and Ecosystem: Introduction, Types of Environment (Natural Environment and its components). Man Made Environment, Social Environment, Concern about the environment, Potential hazards ofcarelessness in development activities (Bhopal tragedy, Chernobyl Accident).

EcoSystem: Definition,Types,structure,functionalcomponentsofecosystem, foodchainandfoodweb,flowofenergyinanecosystem,ecologicalpyramids, Bio magnification, Bio geochemical cycles (Gaseous and sedimentary cycles), ecosystem services andvalues.

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, genetic, species and ecosystem diversity, value of biodiversity; consumptive use, productive use, social, ethical, aesthetic and optional values, India as a mega diversity nation, Hotspotsofbiodiversity,threatstobiodiversity;habitatloss,poachingofwildlife, man-wildlife conflicts; conservation of biodiversity: In-situ and Ex-situ conservation.

UNIT –IV

Environmental Pollution and Control Technologies:

Environmental Pollution: Classification of Pollution

Air Pollution: Primary and Secondary pollutants, air pollution problems, Ambient Air Quality Standards.

WaterPollution: Sourceandtypesofpollution,problemsduetowaterpollution, drinking water qualitystandards.
Soil Pollution: Source and types, Impacts of modern agriculture, degradation of soil.

Noise Pollution: Sources and health hazards, standards.
Solid Waste: Municipal solid waste management, composition and characteristics of E-waste and its management.

Pollution Control Technologies: Wastewater treatments methods: Primary, secondary, tertiary.

UNIT –V

Global Environmental Problems and Global Efforts: Climate change and impact on human environment. Ozone depletion and Ozone depleting substance (ODS). Acid rains, Deforestation and desertification.
International Conventions/Protocols: Earth Summit, Kyoto protocol and Montreal Protocol.

Text Books:

1. Text book of Environmental Studies for undergraduates courses by Erach Bharucha for University GrantsCommission.
2. Environmental Studies by R.Rajagopalan, Oxford UniversityPress.

Reference:

1. Environmental Science: towards a sustainable future by Richard T.Wright. 2008 PHL Learning Private Ltd. NewDelhi.
2. EnvironmentalEngineeringandSciencebyGilbertM.MastersandWendell P. Ela 2008 PHI Learning Pvt.Ltd.
3. Environmental Science by Daniel B. Botkin and Edward A.Keller, Wiley IndiaEdition.
4. Environmental Studies by Anubha Kaushik, 4th Edition, New Age InternationalPublishers.
5. Text Book of Environmental Science and Technology- Dr.M.Anji Reddy 2007 BSPublication.

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

1. Understanding ofEcosystem.
2. Naturalresources,Depletionofnaturalresourcesandpreventionmethods
3. Biodiversity, Protection, sharing of thebiodiversity.
4. Environmental pollution- Understanding of water, soil, noise and air pollution and their controlmeasures.
5. Students can understand about global environmental problems and they are aware of globalefforts.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J4E02)MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS

B.TECH. II YEAR –IISEM **L T P C 3 0 03**

Course Objectives :

1. Toenablethestudenttounderstandandappreciatewithfinancialinsights.
2. Togiveimportanceforcertainbasicissuesgoverningbusinessoperations.
3. To understand the relation between demand and supply of products and services.
4. To understand the relation of cost and output (production) of certain products andservices.
5. To observe the markets and form of businessorganizations.
6. Todescribethefinancialmatterslikecapitalbudgeting,financialaccounting & analysis of different kinds of businessorganizations.

UNIT I

Introduction & Demand Analysis.

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

UNIT II

Production & Cost Analysis: Production Function-

Isoquants and Isocosts, MRTS, Least Cost Combination of Inputs, Cobb-DouglasProductionfunction,LawsofReturns,InternalandExternalEconomies of Scale. Cost Analysis: Cost concepts. Break-even Analysis (BEA)-DeterminationofBreak-EvenPoint(simpleproblems)-ManagerialSignificance.

UNIT III

Markets & New Economic Environment:

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

UNIT IV

Capital Budgeting:

Capital and its significance, Types of Capitat, Estimation of Fixed and Working capitalrequirements,Methodsandsourcesofraisingcapital-TradingForecast, Capital Budget, Cash Budget. Capital Budgeting: features of capital budgeting proposals, Methods of Capital Budgeting: Payback Method, Accounting Rate of Return (ARR) and Net Present Value Method (simpleproblems).

UNIT V

IntroductiontoFinancialAccounting&FinancialAnalysis:

Accounting concepts and conventions - Introduction IFRS - Double-EntryBook Keeping,Journal,Ledger,TrialBalance-FinalAccounts(TradingAccount,Profit and Loss Account and Balance sheet with simple adjustments). Financial, Analysis: Analysis and Interpretation of Liquidity Ratios, Activity Ratios, and Capital structure Ratios and Profitability ratios. Du PontChart'.

References :

1. Varshney & Maheswari: Managerial Economics, Sultan Chand'2009.
2. S.A. Siddiqui &A.S. Siddiqui, Managerial Economics and FinancialAnalysis, New Age international Publishers, Hyderabad2013'.
3. M' Kasi Reddy &Saraswathi, Managerial Economics and Financial Analysis, PHI New Delhi, 2012. Ambrish Gupta, Financial Accounting for Management, Pearson Education, New Delhi.2012.

Course outcomes:

The nature of economic activities like needs and wants of people in micro and macroenvironment.

1. Thecostidentificationofproduct&servicesproducedbyorganizations.
2. Market analysis of organizational products and services with different environments.
3. Determination of long term financial planning and the evaluation by using variousmethods.
4. Preparation of financial reports, analysis of business with different techniques of ration analysis, funds flow analysis,etc.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J4313) THERMAL ENGINEERING-I

B.TECH. II YEAR –IISEM **L T P C 3 1 04**

COURSE OBJECTIVES

1. To learn basic principles and operations of IC engines and SIengines.
2. To make the graduates familiar with the combustion and thermodynamic analysis of compression ignition engines along with testing and evaluating the performance of ICengines.
3. To explain some modern developments in IC Engines and the basic principles of operation ofcompressors.
4. To explain the different types ofcompressors.
5. To demonstrate the refrigeration cycles and theirapplications.

UNIT I

INTERNAL COMBUSTION ENGINES : Classification - Working principles, Valve and Port Timing Diagrams, Air – Standard, air-fuel and actual cycles - Engine systems – Fuel, Carburetor, Fuel Injection System, Ignition system and Coolingsystem.

COMBUSTION IN S.I. ENGINES: Normal Combustion and abnormal combustion – Importance of flame speed and effect of engine variables – Type of Abnormal combustion, pre-ignition and knocking, Fuel requirements and fuel rating, anti knock additives – combustion chamber – requirements,types.

UNIT II

COMBUSTION IN C.I. ENGINES: Four stages of combustion – Delay period and its importance – Effect of engine variables – Diesel Knock– Need for air movement, suction, compression and combustion induced turbulence – open and divided combustion chambers and nozzles used – fuel requirements and fuel rating.

TESTING AND PERFORMANCE OF ENGINES : Parameters of performance - measurement of cylinder pressure, fuel consumption, air intake, exhaust gas composition, Brake power – Determination of frictional losses and indicated power – Performance test – Heat balance sheet and chart.

UNIT III

MODERN DEVELOPMENTS IN IC ENGINES:

Turbo charging and super charging of I.C.engines, Stratified charge engines (Lean burned SI engine) Multi fuel engines, Wankel engine.

COMPRESSORS– Classification –positive displacement and roto dynamic machinery – Power producing and power absorbing machines, fan, blower and compressor – positive displacement and dynamictype.

UNIT IV

ROTARY AND DYNAMIC COMPRESSORS: Roots Blower, vane sealed compressor, Lysholm compressor mechanical details and principle of working – efficiency considerations. Centrifugal compressors: Mechanical details and principleofoperation–velocityandpressurevariation.Energytransfer-impeller blade shape-losses, slip factor, power input factor, pressure coefficient and adiabatic coefficient – velocity diagrams –power.

AXIAL FLOW COMPRESSORS: Mechanical details and principle of operation – velocity triangles and energy transfer per stage degree of reaction, work done factor - isentropic efficiency- pressure rise calculations – Polytropic efficiency.

UNIT V

REFRIGERATION : Mechanical Refrigeration and types – units of refrigeration – Air Refrigeration system, details and principle of operation – applications of air refrigeration, Vapour compression refrigeration systems – calculation of COP–effectofsuperheatingandsubcooling,desiredpropertiesofrefrigerants and common refrigerants- Vapour absorption system – mechanical details – working principle, Use of p-h charts forcalculations.

AIR-CONDITIONING: Concepts of Psychrometry – Properties of moist air – Usage of Psychrometric Chart – Calculation of moist air properties. Types of air – conditioning systems – Requirements – schematic layout of a typical plant.

TEXT BOOKS :

1. I.C. Engines / V. Ganesan-TMH.
2. Thermal Engineering / Rajput / LakshmiPublications.
3. Thermal Engineering /P.K.Nag.

REFERENCE BOOKS :

1. IC Engines – Mathur & Sharma – Dhanpath Rai &Sons.
2. EngineeringfundamentalsofICEngines–Pulkrabek/Pearson/PHI.
3. Thermal Engineering / Rudramoorthy -TMH.
4. Thermodynamics &Heat Engines / B. Yadav/ Central Book Depot., Allahabad.
5. I.C. Engines / Heywood/McGrawHIll.
6. Thermal Engineering – R.S. Khurmi & J.K.Gupta –S.Chand.

COURSE OUTCOMES :

1. AbilitytogainknowledgeontheimportancebehindtheICengines.
2. Ability to know the working of the basic components in the IC engines and Compressors.
3. Ability to explain the combustion process and also how it does affect the performance of the ICengines.
4. AbilitytoApplythethermodynamicprinciplesinthedesignofanICengines andcompressors.
5. Apply the laws of Thermodynamics to evaluate the performance of Refrigeration and air-conditioningcycles.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J4314) KINEMATICS OF MACHINERY

B.TECH. II YEAR –IISEM **L T P C 3 1 0 4**

COURSE OBJECTIVES :

1. To define the concepts of mechanisms and need inmachines/systems.
2. To interpret kinematic analysis on mechanisms (reciprocating &rotary).
3. To state the concepts of instantaneous centre and velocity and accelerations of the links ofmechanism.
4. To learn the various steering gears used in automobiles and power transmitting capacity of beltdrives.
5. To define the cam design and kinematics of gears and geartrains.

UNIT-I

Mechanisms: Elements or Links – Classification – Rigid Link, flexible and fluid link – Types of kinematics pairs – sliding, turning, rolling, screw and spherical pairs – lower and higher pairs – closed and open pairs – constrained motion–completely,partiallyorsuccessfullyandincompletelyconstrained.

Mechanism and Machines – Mobility of Mechanisms: Grubler's criterion, classification of machines – kinematics chain – inversions of mechanism – inversions of quadric cycle chain, single and double slider crank chains, Mechanical Advantage.

UNIT—II

Velocity Analysis: Relative Velocity Method, Instantaneous center Method, the Aronhold- Kennedy Theorem of Three centers, Velocity Diagrams.

Acceleration Analysis: Radial and Transverse Components of Acceleration, The Coriolis Component of Acceleration, Acceleration Diagrams, and Klein's construction.

UNIT—III

Straight-line motion mechanisms: Exact and approximate copied and generated types – Peaucellier - Hart - Scott Russel – Grasshopper – Watt - Tchebicheff's and Robert Mechanism - Pantographs.

Steering gears: Conditions for correct steering – Davis Steering gear, Ackerman's steering gear.

Hooke's Joint: Single and double Hooke's joint –velocity ratio – application – problems.

UNIT – IV

Cams: Definitions of cam and followers – their uses – Types of followers and cams – Terminology–Typesoffollowermotion-Uniformvelocity,Simpleharmonicmotion and Uniform acceleration and retardation. Maximum velocity and maximum accelerationduringOutwardandreturnstrokesintheabove3cases.

Analysis of motion of followers: Tangent cam with Roller follower – circular arc cam with Straight, concave and convex flanks.

UNIT –V

Higherpair: Frictionwheelsandtoothedgears–types–lawofgearing,condition forconstantvelocityratiofortransmissionofmotion–velocityofslidingFormsof teeth,cycloidalandinvolutesprofiles–phenomenaofinterferences–Methodsof interference. Condition for minimum number of teeth to avoid interference – expressionsforarcofcontactandpathofcontactofPinion&GearandPinion& RackArrangements–IntroductiontoHelical–Bevelandwormgearing.

Gear Trains: Introduction – Types – Simple – compound and reverted gear trains –Epicyclic gear train. Methods of finding train value or velocity ratio of Epicyclicgeartrains.Selectionofgearbox-Differentialgearforanautomobile.

TEXT BOOKS :

1. RattanS.S,“TheoryofMachines”,3rdEdition,TataMcGraw-HillPublishing Company Ltd., NewDelhi,2011.
2. Shigley J.E. and Uicker J.J., “Theory of Machines and Mechanisms”, 2ndEdition, McGraw-Hill,Inc.,1995.

REFERENCE BOOKS :

1. Thomas Bevan, “Theory of Machines”, 3rd edition, 3rd impress, CBS Publishers and Distributors,2013.
2. RaoJ.SandDukkipatiR.V,“MechanismandMachineTheory”,2ndEdition, New Age International, New Delhi,2007.
3. SadhuSingh“TheoryofMachines”,3rdedition,PearsonEducation,1997.
4. Ballaney.P.L “Theory of Machines”, 20th edition, KhannaPublishers,1996.
5. Ambekar A. G.,” Mechanism and Machine Theory”, 2nd reprint, Prentice Hall of India, New Delhi,2009.

COURSE OUTCOMES :

1. Ability to analyze the kinematics of linkages to determine position, velocity and acceleration variation throughout the range ofmotion.
2. Ability to develop the ability to come up with innovative ideas regarding mechanisms/machines.
3. Ability to determine the velocity & accelerations of various links of any mechanism.
4. Abilitytodesigncamsorgeartrainstoproduceadesiredmotion.
5. Abilitytoestimatethegearratioandanalyzethedifferentialgearboxofan automobile.

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J4315) MANUFACTURING PROCESSES

B.TECH. II YEAR –IISEM **L T P C 3 0 03**

COURSE OBJECTIVES :

1. To describe the basics of metal casting processes and theirapplications.
2. To learn the types of welding and theirapplications.
3. To illustrate rolling processes theirapplications.
4. To infers the principles and operation of metal forming and sheet metal and drawingoperations.
5. To learn the Principles of forging and extrusion process theirapplications.

UNIT-I

CASTING: Steps involved in making a casting – Advantage of casting and its applications. – Patterns and Pattern making – Types of patterns – Materials used for patterns, pattern allowances and their construction, Principles of Gating, Gating ratio and design of Gating systems.

UNIT-II

Solidification of casting – Concept – Solidification of pure metal and alloys, short & long freezing range alloys. Risers – Types function and design, casting design considerations, special casting processes 1) Centrifugal 2) Die 3) Investment.

Methods of Melting: Crucible melting and cupola operation, steel making processes, special.

UNIT-III

A) Welding: Classification of welding process types of welds and welded joints and their characteristics, design of welded joints, Gas welding, ARC welding, Forge welding, resistance welding, Thermit welding and Plasma (Air and water)welding.

B) Cutting of Metals: Oxy – Acetylene Gas cutting, water plasma. Cutting of ferrous, non-ferrous metals. Inert Gas welding, TIG & MIG, welding, Friction welding, Induction welding, Explosive welding, Laser welding, Soldering & Brazing.Heataffectedzonesinwelding;weldingdefects–causesandremedies – destructive nondestructive testing ofwelds.

UNIT-IV

Hot working, cold working, strain hardening, recovery, recrystallisation and grain growth, Comparison of properties of Cold and Hot worked parts, rolling fundamentals – theory of rolling, types of Rolling mills and products. Forces in rolling and power requirements. Stamping, forming and other cold working processes : Blanking and piercing – Bending and forming – Drawing and its types – wire drawing and Tube drawing – coining – Hot and cold spinning – Types of presses and press tools. Forces and power requirement in the above operations.

UNIT-V

EXTRUSION OF METALS : Basic extrusion process and its characteristics. Hot extrusion and cold extrusion - Forward extrusion and backward extrusion – Impact extrusion Hydrostaticextrusion.

FORGING PROCESSES: Principles of forging – Tools and dies – Types Forging – Smithforging,DropForging–Rollforging–Forginghammers:Rotaryforging – forgingdefects.

TEXT BOOKS :

1. P.N.Rao, Manufacturing Technology, 2/e, Tata McGraw-Hill, New Delhi, 1990.
2. Amitabha Ghosh and Ashok Kumar Mallik, Manufacturing Science, 4/e, Associated East West Press Pvt. Ltd., New Delhi,1991.

REFERENCE BOOKS :

1. George E Dieter, Mechanical Metallurgy, McGraw-Hill, NewYork.
2. Roy, A. Lindberg, Processes and Materials of Manufacture, 5/e, Prentice Hall of India, NewDelhi.
3. O P Khanna, Welding Technology, Dhanapat Rai Publications (P) Ltd., NewDelhi.
4. R S Parmar, Welding Technology, Khanna Publishers, NewDelhi.

COURSE OUTCOMES:

1. Abilitytoanalyzedifferentcastingprocessesbytheirapplications.
2. Abilitytodescribevariousmethodsofweldingwiththeirapplications.
3. Abilitytodeterminematerialdeformationenergyinplanerolling.
4. Ability to explain fundamentals and process of various metal forming and sheet metaloperations.
5. Ability to analyze principles and operation of various metal forging and extrusion operations andapplications.and increase employability

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J4316) MANUFACTURING PROCESSES LAB

B.TECH. II YEAR –IISEM **L T P C 0**
0 31.5

COURSE OBJECTIVES :

1. To provide hands-on laboratory experience in the area ofproduction.
2. To provide basic knowledge about casting and tools used incasting.
3. To familiarize with welding equipment and various weldingprocesses.
4. To acquire practical knowledge in mechanical pressworking.

Minimum of 12 Exercises need to be performed.

I. METALCASTING

1. Pattern Design and making for one castingdrawing.
2. Sand properties testing -Exercise-for strengths, and permeability –1 exercise.
3. Moulding Melting and Casting -1Exercise.

II. WELDING

1. ARC Welding Lap & Butt Joint -2-Exercises.
2. Spot Welding -1Exercise.
3. TIG Welding -1Exercise.
4. Plasma welding and Brazing –2 Exercises (Water PlasmaDevice).

III. MECHANICAL PRESSWORKING

1. Blanking &Piercing operation and study of simple, compound and progressive pressTool.
2. Hydraulic Press : Deep drawing and extrusionoperation.
3. Bending and otheroperations.

IV. PROCESSING OFPLASTICS

1. InjectionMoulding.
2. BlowMoulding.

COURSE OUTCOMES:

1. Ability to apply the principles of production technology in manufacturing industries.
2. Ability to evaluate the quality of weldedjoints.
3. Ability to express the basic idea of press workingtools
4. Ability to recognize different moulding methods onplastics.

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J4317) MACHINE DRAWING PRACTICE

B.TECH. II YEAR –IISEM **L T P C 0**
0 31.5

Prerequisite Subject: Engineering Graphics

COURSE OBJECTIVES :

1. Able to learn basic conventions adopted in machinedrawing.
2. Able to familiarize the machine elements such as screw fasteners, couplings & bearings used indesign.
3. Able to learn the mechanical components like cotter and knuckle joints used indesign.
4. Able to comprehend the assembly drawings for engine parts,valves.
5. Able to predict the machine parts like bench vice, pipe vice, plummer blocketc.

I. MACHINE DRAWINGCONVENTIONS

Need for drawing conventions – introduction to IS conventions

A) Conventional representation of materials, common machine elements and parts such as screws, nuts, bolts, keys, gears, webs andribs.

B) Methods of dimensioning, general rules for sizes and placement of dimensions for holes, centers, curved and taperedfeatures.

C) Title boxes, their size, location and details - common abbreviations & their liberalusage.

D) Types of Drawings – working drawings for machineparts.

II. DRAWING OF MACHINE ELEMENTS AND SIMPLEPARTS

1. Selection of views, additional views for the following machine elements and parts with every drawing proportion.

A) Popularformsofscrewthreads,bolts,nuts,studbolts,tapboltsandset screws.

B) Keys, cotter joints and knucklejoint.

C) Riveted joints forplates.

D) Shaft coupling, spigot and socket pipejoint.

E) Journal, pivot and collar and foot stepbearings.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(JMC02) GENDER SENSITIZATION

B.TECH. II YEAR –IISEM **L T P C 2 0 00**

Objectives :

1. To develop students' sensibility with regard to issues of gender in contemporaryIndia.
2. To provide a critical perspective on the socialization of men and women.
3. To introduce students to information about some key biological aspects of genders.
4. To expose the students to debates on the politics and economics ofwork.
5. To help students reflect critically on genderviolence.
6. To expose students to more egalitarian interactions between men and women.

UNIT – I

UnderstandingGender: Gender:WhyShouldWeStudyIt?(TowardsaWorld ofEquals:Unit-1)Socialization:MakingWomen,MakingMen(TowardsaWorld of Equals: Unit -2) Introduction. Preparing for Womanhood. Growing up Male. First lessons in Caste. DifferentMasculinities.

UNIT – II

Gender and Biology Missing Women: Sex Selection and Its Consequences (Towards a World of Equals: Unit-4) Declining Sex Ratio. Demographic Consequences. Gender Spectrum: Beyond the Binary (Towards a World of Equals: Unit -10) Two or Many? Struggles with Discrimination.

UNIT – III

Gender and Labour Housework: The Invisible Labour (Towards a World of Equals: Unit -3) "My Mother doesn't Work." "Share the Load." Women's Work: ItsPoliticsandEconomics(TowardsaWorldofEquals:Unit-7)FactandFiction. Unrecognized and Unaccounted work. Additional Reading: Wages and Conditions ofWork.

UNIT – IV

IssuesofViolenceSexualHarassment: SayNo!(TowardsaWorldofEquals: Unit -6) Sexual Harassment, not Eve-teasing- Coping with Everyday Harassment- Further Reading: "Chupulu". Domestic Violence: Speaking Out (Towards a World of Equals: Unit -8) Is Home a Safe Place? -When Women Unite [Film]. Rebuilding lives. Additional Reading: New Forums forJustice.

ThinkingaboutSexualViolence(TowardsaWorldofEquals:Unit-11)Blaming the Victim-"I Fought for my Life…." – Additional Reading: The Caste Face of Violence.

UNIT –V

Gender : Co – Existence Just Relationships: Being Together as Equals (Towards aWorldofEquals:Unit-12)Mary KomandOnler.LoveandAcidjust donotMix.LoveLetters.MothersandFathers.AdditionalReading:RosaParks- The BraveHeart.

Text Book :

All the five Units in the Textbook, "Towards a World of Equals: A Bilingual Textbook on Gender" written by A.Suneetha, Uma Bhrugubanda, Duggirala Vasanta, Rama Melkote, Vasudha Nagaraj, Asma Rasheed, Gogu Shyamala, Deepa Sreenivas and Susie Tharu and published by Telugu Akademi, Hyderabad,Telangana State in the year 2015.

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

Reference :

1. Menon, Nivedita. Seeing like a Feminist. New Delhi: Zubaan-Penguin Books,2012.
2. Abdulali Sohaila. "I Fought For My Life…andWon".

Outcomes :

1. Students will have developed a better understanding of important issues related to gender in contemporaryIndia.
2. 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 andfilm.
3. Students will attain a finer grasp of how gender discrimination works in our society and how to counterit.
4. Students will acquire insight into the gendered division of labour and its relation to politics andeconomics.
5. Men and women students and professionals will be better equipped to work and live together asequals.
6. Students will develop a sense of appreciation of women in all walks oflife.
7. Through providing accounts of studies and movements as well as the new lawsthatprovideprotectionandrelieftowomen,thetextbookwillempower students to understand and respond to genderviolence.

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J5E01) MANAGEMENT SCIENCE

B.TECH. III YEAR –ISEM **L T P C 3 0 03**

Course Objectives :

1. This course is intended to familiarize the students with the framework for themanagersandleadersavailableforunderstandingandmakingdecision related toorganization.
2. Formation of Organizationalstructures.
3. Industrial management shows how to do things better in every sphere of activity including industry andacademics.
4. Ithelpsinunderstandingandmakingdecisionsrelatingtoissuesregarding organizational structure , production operations,marketing.
5. Itisagrowingbusinessfieldthatcanleadtoavarietyofcareerpaths.

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 -BasicprocedureinvolvedinMethodStudyandWorkMeasurement-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, MarketingMix,andMarketingStrategiesbasedonProdcutLifeCycle,Channels ofdistribution.

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 SalaryAdministration,Promotion,Transfer,Seperation,PerformanceAppraisal, Grievance Handling and Welfare Administration, Job Evaluation and Merit Rating - Capability Maturity Model (CMM) Levels – Performance Management System.

UNIT - IV:

ProjectManagement(PERT/CPM): NetworkAnalysis,ProgrammeEvaluation andReviewTechnique(PERT),CriticalPathMethod(CPM),Identifyingcritical path, Probability of Completing the project within given time, Project Cost Analysis, Project Crashing (simpleproblems).

UNIT - V:

StrategicManagementandContemporaryStrategicIssues: 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 BusinessStrategies.

TEXT BOOKS :

1. Stoner, Freeman, Gilbert, Management, 6th Ed, Pearson Education, New Delhi,2004.
2. P. Vijay Kumar, N. Appa Rao and Ashnab, Chnalill, Cengage Learning India,2012.

REFERENCE BOOKS :

1. KotlerPhilipandKellerKevinLane:MarketingManagement,Pearson,2012.
2. KoontzandWeihrich:EssentialsofManagement,McGrawHill,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.

Course outcomes:

1. Strongemphasisonthepracticalskillsessentialtosuccessfulmanagement careers.
2. Identify the theories and practices of the business ethics and social responsibilities.
3. The learning outcomes are used in evaluating students decision making in building up therecareer.
4. Applymanagementsciencetocasestudiesinfindingsolutions.
5. It guides then in establishing themselves as effective professionals by solving realproblems.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(UGC-AUTONOMOUS)

(J5318) DYNAMICS OF MACHINERY

B.TECH. III YEAR –ISEM **L T P C 3 0 03**

COURSE OBJECTIVES :

1. Toexplaintheeffectoffrictionalforceonclutchesandbrakesundervarious conditions.
2. Tocomposetheknowledgeofkinematicsynthesisanddynamicsofdifferent applications of gyroscopic and precessionmotion.
3. To generates the knowledge on the concept of energy stored in the fly wheels and speed regulations of variousgovernors.
4. To infers the concepts of static and dynamic mass balancing of rotating and reciprocating masses to minimize vibrations andnoise.
5. To Comprehend the concepts of free and dampedvibrations.

UNIT – I

Precession: Gyroscopes,effectofprecessionmotiononthestabilityofmoving vehicles such as motor car, motor cycle, aero planes and ships. Static and dynamic force analysis of planarmechanisms.

Clutches: Friction clutches- single disc or plate clutch, multiple disc clutch, cone clutch and centrifugal clutch.

UNIT –II

Brakes and dynamometers: Simple block brakes, internal expanding brake, band brake of vehicle. Dynamometers – absorption and transmission types. General description and methods of operations.

UNIT – III

Turning moment diagram and fly wheels: Turning moment – Inertia Torque connecting rod angular velocity and acceleration, crank effort and torque diagrams – Fluctuation of energy – Fly wheels and their design.

Governors: Watt, Porter and Proell governors. Spring loaded governors – Hartnell and hartung with auxiliary springs. Sensitiveness, isochronisms and hunting.

UNIT – IV

Balancing: Balancing of rotating masses Single and multiple – single and different planes.

Balancingofreciprocatingmasses: Primary,Secondaryandhigherbalancing ofreciprocatingmasses.Analyticalandgraphicalmethods.Unbalancedforces and couples examination of “V” multi cylinder in line and radial engines for primary and secondary balancing, locomotive balancing – Hammer blow, Swaying couple, variation of tractive efforts.

UNIT – V

Vibration: Free Vibration of mass attached to vertical spring – oscillation of pendulums,centersofoscillationandsuspension.Transverseloads,vibrations of beams with concentrated and distributed loads. Dunkerly’s methods, Raleigh’s method. Whirling of shafts, critical speeds and torsional vibrations, two and three rotor systems. Simple problems on forced damped vibration Vibration Isolation &Transmissibility.

TEXT BOOK :

1. Rattan S.S, “Theory of Machines”, Tata McGraw-Hill Publishing Company Ltd., New Delhi,2007.
2. Shigley J.E. and Uicker J.J., “Theory of Machines and Mechanisms”, McGraw-Hill, Inc.,1995.

REFERENCE BOOKS :

1. Rao J.S and Dukkipati R.V, “Mechanism and Machine Theory”, New Age International, NewDelhi,2007.
2. Thomas Bevan, “Theory of Machines”, CBS Publishers and Distributors, 1984.
3. Sadhu Singh “Theory of Machines”, Pearson Education, 2002.
4. Ballaney.P.L “Theory of Machines”, KhannaPublishers,1990.
5. Ghosh A. and Mallick A.K., “Theory of Mechanisms and Machines”, Affiliated East- West Press Pvt. Ltd., New Delhi,1988.

COURSE OUTCOMES :

1. Abilitytosolvethepracticalproblemsonclutchesandbrakesundervarious conditions.
2. Ability to recognize the needs of various principles of dynamics and application of brakes anddynamometers.
3. Abilitytoanalyzetheenergystorageintheflywheelsandspeedregulations of variousGovernors.
4. Ability to balance the unbalanced forces developed in the rotating and reciprocatingmasses.
5. Ability to analyze the concepts of vibrations & take measures to minimize vibration andnoise.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J5319) THERMAL ENGINEERING-II

B.TECH. III YEAR –ISEM **L T P C 3**
1 04

Prerequisite: Thermodynamics, Thermal Engineering-1

COURSE OBJECTIVES :

1. To explain about main features of Rankine cycle and its performance improvement along with boilers, boileraccessories.
2. To describe about and performance of a steamnozzles.
3. To infers the salient features of impulse, reactionturbines.
4. To learn about different types of steam condensers and gasturbines.
5. To learn about classification and working of jet propulsion and rocket engines.

UNIT – I

BasicConcepts: Rankinecycle-Schematiclayout,ThermodynamicAnalysis, Concept of Mean Temperature of Heat addition, Methods to improve cycle performance – Regeneration & reheating. Combustion: fuels and combustion, concepts of heat of reaction, adiabatic flametemperature.

Boilers: Classification – working principles – with sketches including H.P.Boilers – Mountings and Accessories – working principles, boiler performance – draught.

UNIT II

Steam Nozzles : Function of nozzle – applications - types, Flow through nozzles, thermodynamic analysis – assumptions -velocity of nozzle at exit-Idealandactualexpansioninnozzle,velocitycoefficient,conditionformaximum discharge, critical pressure ratio, criteria to decide nozzle shape: Super saturated flow, its effects, degree of super saturation and degree of under cooling - Wilsonline.

UNIT – III

SteamTurbines: Classification–Impulseturbine;Mechanicaldetails–Velocity diagram – effect of friction – power developed, axial thrust, blade or diagram efficiency – condition for maximum efficiency. Velocity and Pressure variation alongtheflow–combinedvelocitydiagramforavelocitycompoundedimpulse turbine.

ReactionTurbine: Mechanicaldetails–principleofoperation,thermodynamic analysis of a stage, degree of reaction –velocity diagram – Parson's reaction turbine – condition for maximumefficiency.

UNIT – IV

SteamCondensers:Requirementsofsteamcondensingplant–Classification of condensers – working principle of different types – vacuum efficiency and condenser efficiency – air leakage, sources and its affects, air pump- cooling waterrequirement.

Gas Turbines: Simple gas turbine plant – Ideal cycle, essential components – parameters of performance– actual cycle – regeneration, inter cooling and reheating –Closed and Semi-closed cycles – merits and demerits.

UNIT – V-

Jet Propulsion : Principle of Operation –Classification of jet propulsive engines – Working Principles with schematic diagrams and representation on T-S diagram - Thrust, Thrust Power and Propulsion Efficiency– Turbo jet engines – Needs and Demands met by Turbo jet – Schematic Diagram, Thermodynamic Cycle, Performance Evaluation Thrust Augmentation –Methods.

Rockets: Application – Working Principle – Classification – Propellant Type – Thrust, Propulsive Efficiency – Specific Impulse – Solid and Liquid propellant Rocket Engines.

TEXT BOOKS:

1. Thermal Engineering / R.K. Rajput / LakshmiPublications.
2. Gas Turbines – V.Ganesan/TMH.

REFERENCE BOOKS :

1. Thermodynamics and Heat Engines / R. Yadav / Central BookDepot.
2. Gas Turbines and Propulsive Systems – P.Khajuria&S.P.Dubey - / Dhanpatrai.
3. Thermal engineering-Ajoy kumar,narosapublications.
4. Gas Turbines / Cohen, Rogers and SaravanaMuttoo / Addison Wesley – Longman.
5. Thermal Engineering-R.S Khurmi/JSGupta/S.Chand.
6. Thermal Engineering-P.L.Bellaney/ khannapublishers.
7. Thermal Engineering-M.L.Marthur& Mehta/Jainbros.

COURSE OUTCOMES :

1. Ability to analyze the different steam power plants and working ofboilers.
2. Ability to demonstrate the working of steamnozzles.
3. Capability to analyze the working of different steamturbines.
4. Ability to interpret about stem condenser and gas turbinecomponents.
5. Illustrate the working of jet propulsion and rocketengines.

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J5321) MANUFACTURING TECHNOLOGY

B.TECH. III YEAR –ISEM **L T P C 4 0 04**

COURSE OUTCOMES :

1. To describe the fundamentals of metal cutting and cutting toolgeometry.
2. To define the working of lathe, shaper, planer, drilling, milling and grinding machines.
3. To explain the speed and feed mechanisms of machinetools.
4 To estimate machining times for machining operations on machinetools
5. To explain the concepts of finishing operations like grinding, lapping, honing and broaching.

UNIT -I

Elementary treatment of metal cutting theory – Element of cutting process - Geometry of single point cutting tool and angles, chip formation and types of chips,chipbreakers.Mechanicsoforthogonalcutting-Merchant'sforcediagram, cutting forces – cutting speeds, feed, depth of cut, tool life, coolants, machinability – Toolmaterials.

UNIT – II

Engine lathe – Principle of working, specification of lathe – types of lathe – Taper turning, thread turning – Lathes and attachments. Turret and capstan lathes – work holding, tool holding devices –tool layout.

UNIT – III

Shaper, Slotting and Planning Machine: Types, principal parts, mechanism, operations and machining time calculations.

Drilling Machine: Types, principal parts, Nomenclature of a drill, spindle drive and feed mechanisms, work and tool holding devices, drilling operations.

Boring Machine: principal parts, Types and operations.

UNIT – IV

Milling machine: Types, Up Milling Vs Down Milling, Types of milling cutters, Operations, Dividing head, Machining time estimation.

UNIT –V

Grinding machines: Types –specification of a grinding wheel and selection of agrindingwheel,Truing,Dressing,andClassificationofGrindingwheels,types ofabrasives.

Surface Finishing Processes: Lapping, Honing and Super-finishing processes.

TEXT BOOKS :

1. HajraChowdary,S.K.,Bose.S.KandHajraChowdary,A.K.,¯Elementsof Workshop Technology , Vol. II, 5th edn., Asia Publishing House, Bombay, 1982.
2. Atextbookofmanufacturingtechnology–IIbyPCSharma,S.chand,2010.
3. Manufacturing Technology, Volume II By P.N.Rao,TMH,2009.

REFERENCE BOOKS :

1. Kalpakjian, S. and Steven R. Schmid, Manufacturing, Engineering &Technology, 3rd edn., Pearso,1995.
2. Principles of Machine Tools, Bhattacharyya A and Sen.G.C / New Central BookAgency.

COURSE OUTCOMES :

1. Ability to define and explain nomenclature of single point cutting tool in various systems andselect.
2. Abilitytoclassifyvarioustypesofmachinetoolsandtheiroperations.
3. Ability to comprehend the features, operations and applications of various machinetoolslikelathe,drilling,milling,shaperandgrinding.
4. Ability to describe various mechanisms of feed and speed changing in lathe,quickreturninslottingquillindrilling,indexinginmilling.
5. Ability to summarize features, operations and applications of various surface finishingprocess.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J5333) FINITE ELEMENT METHOD

B.TECH. III YEAR–ISEM **L T P C 3 0 03**

COURSE OBJECTIVES :

1. To apply vector mechanics as a tool for problemsolving.
2. To define the need in Design for the Finite ElementMethod.
3. To learnmechanicalengineeringdesignconceptstousetheFiniteElement Method software correctly andefficiently.
4. To analyze a physical problem; develop experimental procedures for accuratelyinvestigatingtheproblem,andeffectivelyperformanddocument findings.
5. To explain the forces associated with different parts of amachine.

UNIT-I

Introduction to FEM: Basic Concepts, historical background, application of FEM, General description, comparison of FEM with methods, Basic equations of elasticity, Stress-strain and strain-displacement relations. Rayleigh-Ritz method, weighted residual methods.

UNIT-II

One Dimensional problems: Stiffness equations for a axial bar element in localco-ordinatesusingpotentialenergyapproachandvirtualenergyprinciple-properties of stiffness matrix. Finite element analysis of uniform stepped and tapered bars subjected to mechanical and thermal loads-Assembly of global stiffness matrix and load vector- Quadratic shapefunctions.

UNIT-III

Stiffness equations for a truss bar element oriented in 2D plane-Finite element analysisoftrusses-Planetrussandspacetrusselements-methodsofassembly, Analysis of beams: Hermite shape functions-Elements stiffness matrix – Load vector-Problems.

UNIT-IV

Problems: CST element –Stiffness matrix and load vector- Isoparametric elementrepresentation-Shapefunctions-Convergencerequirements-Problems Two dimensional four noded isoparametric elements – numerical integration – finite element modeling of Axisymmetric solids subjected to Axisymmetric loading with triangular elements- 3-D problems. Tetrahedranelements.

UNIT-V

Scalarfieldproblems:1-DHeatconduction–1DFiniteelements-Composite slabs–2DHeatconduction-analysisofthinplates-Problems.DynamicAnalysis:

Dynamic equations- Lumped and consistent mass matrices-Eigen values and Eigen Vectors-mode shapes-modal analysis for bars and beams.

TEXT BOOKS :

1. Introduction of Finite Element Analysis – S.Md.Jalaludeen - Anuradha Publications.
2. Introduction to Finite Elements in Engineering –Tirupathi K. Chandragupta and AshokD.Belagundu.

REFERENCE BOOKS :

1. The Finite Element Methods in Engineering –SS Rao-Elsevier-4th Edition.
2. AnintroductiontoFiniteElementMethod–JNReddy-McGrawHill.
3. The Finite Element Method in engineering science –O.C. Zienkowitz, Mc. GrawHill.
4. Finite Element Methods/Alavala/TMH.
5. Conceptsandapplicationoffiniteelementanalysis-RobertCook–Wiley.

COURSE OUTCOMES :

1. Ability to summarize the numerical methods involved in Finite Element Theory and the role and significance of shape functions in finite element formulations and use linear, quadratic, and cubic shape functions for interpolation.
2. Abilitytofamiliarizedirectandformal(basicenergyandweightedresidual) methods for deriving finite elementequations.
3. Ability to formulate one-dimensional elements (truss andbeam).
4. Ability to formulate two-dimensional elements (triangle and quadrilateral continuum and shellelements).
5. Ability to formulate three-dimensionalelements.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J5334)ROBOTICS

B.TECH. III YEAR–ISEM **L T P C 3 0 03**

COURSE OBJECTIVES :

1. To describe the basics of robots and various types ofgripper.
2. To explain the rotation matrices and D-Hrepresentation.
3. To infers the fundamentals of robotdynamics.
4. To differentiate the Path and the trajectory planning ofrobots.
5. To illustrate the various sensors used in robots and industrial applications ofrobots.

UNIT - I

INTRODUCTION : Basic concepts – Robot anatomy –Components of robots-Robot motions – Number of D.O.F – Work volume – Robot drive systems – Classification of robots by control method – Specifications of robots.

END EFFECTORS: Introduction – Types of end effectors – Mechanical grippers – Vacuum cups, magnetic grippers, adhesive gripers and others – Robot / End effectorsinterface–Considerationsingripperselectionanddesign.

UNIT - II

MANIPULATORKINEMATICS: Introduction–CoordinateFrames,Description of Objects in space, Transformation of vectors, Inverting a Homogeneous Transform, Fundamental Rotation Matrices, Problems- D-H representation – problems on forwardkinematics.

UNIT - III

DYNAMICS: Introduction -Differential transformations- jacobian – problems–, Lagrange Euler formulation , Problems.

UNIT - IV

TRAJECTORY PLANNING: Introduction – considerations on trajectoryplanning – joint Interpolated trajectory – Cartesian path trajectory – problems.

ROBOT PROGRAMMING :- Methods of robot programming – Lead through method.- Textual robot languages – Generations of programming languages – Robot language structure – Motion commands – End effector and sensor commands – VAL II programming language.

UNIT - V

ACTUATORS: Pneumatic, Hydraulic actuators, Servo motors, Stepper motors.

SENSORS: Position sensors: Potentiometers, resolvers, encoders – velocity sensors.

ROBOTAPPLICATIONINMANUFACTURING: Materialtransferandmachine loading/ unloading applications – Processing operations – Assembly and inspection – Futureapplications.

TEXT BOOKS :

1. MikellP.Groover, Mitchell Weiss, Roger N. Nagel&Nicholas G. Odrey; Industrial Robotics, McGraw- HILL InternationalEditions,1986.
2. R.K.Mittal and IJ Nagrath, Robotics and Control ,Tata McGraw – Hill publishing company Limited, NewDelhi,2003.

REFERENCE BOOKS :

1. Robert J.Schilling, Fundamentals of robotics analysis &control, PHI learning private limited, New Delhi,4thEdition 2002.
2. SaeedB.Niku, Introduction to robotics analysis systems Application, PHI learning private limited, NewDelhi,2002.
3. K.S.Fu, R.C Gonzalez and C.S.G.Lee, Robotics control, Sensing, vision, and intelligence; McGraw HILL International Editions,3rdEdition2008.

COURSE OUTCOMES :

1. Ability to apply robot fundamentals in designing various types of end effectors.
2. Abilitytodesigntheendeffectorsrequiredfordifferentapplications.
3. AbilitytoformulateD-Hmatricesforforwardkinematicsproblems&Develop dynamic equations for robot dynamicproblems.
4. Abilitytodeterminetherobottrajectorytoroboticmotion&BasicsofRobot Language.
5. Ability to select the sensors depending upon robotic application & its uses in variousareas.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J5335) PRODUCTION PLANNINGANDCONTROL **B.TECH. III YEAR–ISEM L T P C 3 0 03**

COURSE OBJECTIVES :

1. To explain about the problems and opportunities faced by the operations manager in Manufacturing and service organizations.
2. To develop an ability to apply Production planning control concepts in a various areas like marketing, accounting, finance, engineering, personnel management, logistics,etc.
3. To integrate operations concepts with other functional areas ofbusiness.
4. To differentiate the Production planning and control function in both manufacturing and serviceorganizations.
5. To examine several classic Operations Management planning topics including Production planning and inventorycontrol.

UNIT – I

Introduction : Definition – Objectives of production Planning and Control – Functions of production planning and control – Elements of production control – Types of production – Organization of production planning and control department – Internal organization ofdepartment.

UNIT – II

Forecasting – Importance of forecasting – Types of forecasting, their uses – Generalprinciplesofforecasting–Forecastingtechniques–qualitativemethods and quantitativemethods.

UNIT – III

Inventory management – Functions of inventories – relevant inventory costs – ABC analysis – VED analysis – EOQ model – Inventory control systems – P–Systems and Q-Systems – Introduction to MRP &ERP, LOB (Line ofBalance), JIT inventory, and Japaneseconcepts.

UNIT –IV

Routing – Definition – Routing procedure –Route sheets – Bill of material – Factors affecting routing Procedure. Schedule –definition – Difference with loading,SchedulingPolicies–Techniques,Standardschedulingmethods,Line Balancing, Aggregate planning, Chase planning, Expediting, controlling aspects.

UNIT –V

Dispatching – Activities of dispatcher – Dispatching procedure – follow up – definition – Reason for existence of functions – types of follow up, applications of computer in production planning and control.

TEXT BOOKS :

1. Elements of Production Planning and Control / SamuelEilon.
2. Modern Production/ operation managements / Baffa & RakeshSarin.

REFERENCE BOOKS :

1. Operations Management – S.N.Chary.
2. InventoryControlTheoryandPractice/MartinK.StarrandDavidW.Miller.
3. ReliabilityEngineering&QualityEngineeringbyDr.C.NadhaMuniReddy and Dr. K. Vijaya Kumar Reddy, Galgotia Publications, Pvt., Limited.
4. Production Control A Quantitative Approach / John E.Biegel.
5. Production Control /Moore.
6. Operations Management / JosephMonks.

COURSE OUTCOMES :

1. Ability to recognize the objectives, functions, applications of PPC and forecastingtechniques.
2. Ability to explain different Inventory controltechniques.
3. Ability to solve routing and scheduling problems
4. Abilitytosummarizevariousaggregateproductionplanningtechniques.
5. Abilitytodescribewayofintegratingdifferentdepartmentstoexecute PPC functions.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J5320) THERMAL ENGINEERING LAB

B.TECH. III YEAR –ISEM **L T P C 0**
0 31.5

COURSE OBJECTIVES :

1. To learn the construction and working principle of I.C. Enginespractically.
2. Toexplaintheworkingprincipleandperformanceofaircompressorpractically.
3. To learn the heat balance test of an I.C.Engine.
4. To acquire the priorities given to the efficient use of energy and the minimization of Environmentalpollution.
5. To explain the usage of data acquisitionsystems.

LIST OF EXPERIMENTS :

At least 10 Experiments are required to be conducted

1. I.C. Engines Valve & Port TimingDiagrams.
2. Performance Test on single cylinder 4 -Stroke Diesel Engine by using MechanicalDynamometer.
3. Performance Test on Reciprocating Air –Compressor.
4. Evaluation of Engine friction by conducting Motoring/Retardation test on 4-stroke DieselEngine.
5. Study ofboilers.
6. I.C. Engine Heat Balancesheet.
7. Performance Test on single cylinder 2-Stroke PetrolEngine.
8. PerformancetestonMulticylinder4-strokepetrolenginebyusingHydraulic Dynamometer.
9. Performance Test on Variable Compression Ratio single cylinder 4-Stroke Diesel Engine By using Eddy CurrentDynamometer.
10. Evaluation of Engine friction by conducting Morse test on 4-Stroke Multi cylinder PetrolEngine.
11. Determineofeconomicalspeedtestforfixedloadon4-strokeengine.
12. Assembly / Disassembly ofEngines.

COURSE OUTCOMES :

1. Ability to find the efficiency and performance of an engine system for a given set ofconditions.
2. Ability to calculate the Volumetric efficiency of aircompressor.
3. Ability to develop skills in data acquisitionsystems.
4. Abilitytoevaluatetheengineperformanceandexplorethewaystoimprove the efficiency ofengines.
5. Abilitytorealizetheneedtominimizethelossesinengines.

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J5322) MANUFACTURING TECHNOLOGY LAB

B.TECH. III YEAR –ISEM **L T P C 0**
0 31.5

COURSE OBJECTIVES :

1. To learn the various machiningprocesses.
2. To familiarize with the tools used in machineshop.
3. Todefinebasicoperationsoflathe,milling,drilling,shapingandplanning machinesetc.

LIST OF EXPERIMENTS :(Any 12 experiments may be conducted).

1. Machining operations on Lathe. (ThreeExercises).
2. Machining operations on Radial drilling machine. (TwoExercises).
3. Machining operations on Shaping Machine. (OneExercise).
4. Machining operations on Planning Machine. (OneExercise).
5. Machining operations on Slotting Machine. (One Exercise).
6. Machining operations on Milling Machine. (Two Exercises).
7. Machining operations on Cylindrical Grinding Machine. (OneExercise).
8. Machining operations on Surface grinding Machine. (OneExercise).
9. Tool and cutter grinder Machine. (OneExercise).

COURSE OUTCOMES :

1. Abilitytoexhibitthedevelopingsequenceofmachiningoperationsrequired for inindustry.
2. Capability of manufacturing components according to given working drawings.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(JMC03) CONSTITUTION OF INDIA

B.TECH. III YEAR –ISEM **L T P C 2 0 00**

Objectives :

1. The Constitution is the basic and fundamentallaw.
2. To introduce concepts and salient features of the constitutionIndian.
3. Analyze the Preamble of the Constitution and identify the core values reflected init.
4. Appreciatethecoreconstitutionalvaluesthatpermeatethesalientfeatures ofthe.
5. Indian Constitution; and examine the nature of the Indian federal system and the parliamentary form ofgovern.

UNIT - I

Introduction to Constitution' meaning of the term,, Indian Constitution: Sources andconstitutionalhistory,Features:Citizenship,Preamble,FundamentalRights and Duties, Directive Principles of StatePolicy.

UNIT - II

Union Government and its Administration Structure of the Indian Union: Federalism, Centre- State relationship, President: Role, power and position, PM and Council of ministers, Cabinet and Central Secretariat, Lok Sabha, Rajya Sabha.

UNIT - III

State Government and its Administration Governor: Role and Position, CM and Council of ministers, State Secretariat: Organisation, Structure and Functions.

UNIT - IV

Local Administration District's Administration head: Role and Importance, Municipalities:Introduction, Mayor and role of Elected Representative, CEO of Municipal Corporation, Pachayatiraj: Introduction, PRI: Zila parishadh, Elected officials and their roles, CEO Zila parishadh: Position and role, Block level: Organizational Hierarchy (Different departments) village level: Role of Elected and Appointed officials,Importance of grass root democracy,

UNIT - V

Election Commission Election Commission: Role and Functioning, Chief Election Commissioner and Election Commissioners, State Election Commission: Role and Functioning, Institute and Bodies for the welfare of SC/ ST/OBC and women.

References:

1. Books.Recommended.
2. Indian Polity' byLaxmikanth.
3. Indian Administration' by SubhashKashyap.
4. 'Indian Constitution' by D.D.Basu.
5. 'Indian Administration' by Avasti andAvasti.

Outcomes :

1. Italsotellsusabouttherightsandalsothedutiesofitscitizens.
2. Theyknowabouttherole,powersofmembersoflocalsabhaandrajsabha.
3. It lays down the rules to govern the country.skills
4. Role and function of electioncommissioner.
5. Poweranddutiesofelectedrepresentedsforpanchayatraj,ZP,corporation and Importance ofdemocracy.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(UGC-AUTONOMOUS)

(J6323) DESIGN OF MACHINE ELEMENTS

B.TECH. III YEAR–IISEM **L T P C 3 0 03**

Pre requisites: Mechanics, Strength of materials.

COURSE OBJECTIVES :

1. To define concepts of various types of stress concentration factors and applicationoffailuretheorygeometriesandtheconceptsregardingriveted, welded, bolted joints and eccentricloading.
2. To learn the concepts of stresses in various joints like keys, cotters and knuckle.
3. To familiarize the concepts of Shaft couplings and Shaftcoupling.
4. To infers the concepts regarding design of bearings, shafts and different engineparts.
5. To acquire the concepts related to design and analysis of spur and helical gears.

UNIT – I

Strength of machine elements : Stress concentration – Theoretical stress Concentration factor – Fatigue stress concentration factor notch sensitivity – Design for fluctuating stresses – Endurance limit – Estimation of Endurance strength – Goodman's line – Soderberg's line – Modified Goodman's line. Riveted and welded joints – Design of joints with initial stresses – eccentric loading. Bolted joints – Design of bolts with pre-stresses – Design of joints under eccentric loading – locking devices – both of uniform strength, different seals.

UNIT - II

Keys, Cotters and Knuckle joints: Design of Keys-stresses in keys-cottered joints-spigotandsocket,sleeveandcotter,jibandcotterjoints-Knucklejoints.

Shafts: Design of solid and hollow shafts for strength and rigidity – Design of shafts for combined bending and axial loads – Shaft sizes – BIS code. Use of internal and external circlips, Gaskets and seals (stationary & rotary).

UNIT – III

Shaftcoupling: Rigidcouplings–Muff,SplitmuffandFlangecouplings.Flexible couplings – Flange coupling(Modified).

Mechanical Springs : Stresses and deflections of helical springs – Extension -compressionsprings–Springsforfatigueloading–naturalfrequencyofhelical springs – Energy storage capacity – helical torsion springs – Co-axial springs, leafsprings.

UNIT – IV

Bearings : Types of Journal bearings – Lubrication – Bearing Modulus – Full and partial bearings –Clearance ratio – Heat dissipation of bearings, bearing materials –journal bearing design – Ball and roller bearings – Static loading of ball & roller bearings, Bearing life.

Engine parts: Connecting Rod: Thrust in connecting rod – stress due to whipping action on connecting rod ends – Cranks and Crank shafts, strength and proportions of over hung and center cranks – Crank pins, Crank shafts. Pistons Forces acting on piston.Construction Design and proportions ofpiston. Cylinder, Cylinderliners.

UNIT – V

Spur & Helical gear drives: Spur gears- Helical gears – Load concentration factor–Dynamicloadfactor.Surfacecompressivestrength–Bendingstrength – Design analysis of spur gears – Estimation of centre distance, module and face width, check for plastic deformation. Check for dynamic and wear considerations.

TEXT BOOKS :

1. Machine Design, V.Bandari TmhPublishers.
2. Machine Design, S MD Jalaludin, AnuRadhaPublishers.
3. Design Data hand Book, S MD Jalaludin, AnuRadhaPublishers.

REFERENCE BOOKS :

1. Design of Machine Elements / V.M.Faires.
2. Machine design / SchaumSeries.
3. Machine design – Pandya &shah.

COURSE OUTCOMES :

1. Graduates will be able to apply the concepts of various types of stress concentrationfactorsandapplicationoffailuretheorygeometries.
2. Abilitytodesignriveted,welded,boltedjointsforeccentricloading.
3. Capability to design keys, cotters and knuckle joints using the concepts of stresses.
4. Ability to design bearings, shafts and different engineparts.
5. Ability to design and analyze spur and helicalgears.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J6324) HEAT TRANSFER

B.TECH. III YEAR–IISEM **L T P C 3 1 0 4**

Prerequisites: Thermodynamics, Thermal Engineering
COURSE OBJECTIVES :

1. To learn the basic differential equations of heat transfer in conduction, convection andradiation.
2. To analyze the concept of one dimensional steady state and unsteady state heatconduction.
3. To explain the mechanisms and correlations of ForcedConvection.
4. To illustrates the LMTD and NTU concepts in heatexchangers.
5. To explain the mechanism of radiation heat transfer and phase change processes of boiling andcondensation.

UNIT- I
Introduction: Modes and mechanisms of heat transfer – Basic laws of heat transfer –general discussion about applications of heat transfer.

Conduction Heat Transfer: Fourier rate equation – General heat conduction equation in Cartesian, Cylindrical and Spherical coordinates – simplification and forms of the field equation – steady, unsteady and periodic heat transfer – Initial and boundary conditions.

One Dimensional Steady State Conduction Heat Transfer: Homogeneous slabs,hollowcylindersandspheres-Compositesystems–overallheattransfer coefficient–Electricalanalogy–Criticalradiusofinsulation.

UNIT-II
OneDimensionalSteadyStateConductionHeatTransfer: VariableThermal conductivity –systems with heat sources or Heat generation-Extended surface (fins)HeatTransfer–LongFin,FinwithinsulatedtipandShortFin,Application to error measurement ofTemperature.

One Dimensional Transient Conduction Heat Transfer: Systems with negligible internal resistance – Significance of Biot and Fourier Numbers – Infinite bodies- Chart solutions of transient conduction systems- Concept of Semi infinite body.

UNIT-III
Convective heat transfer: Classifications of fluid flows. Dimensional analysis asatoolforexperimentalinvestigation–Buckingham'sð-theoremandmethod - Significance of non-dimensional numbers.

Forcedconvection:Externalflows:conceptsabouthydrodynamicandthermal boundarylayer-useofempiricalcorrelationsforconvectiveheattransfer-flow over a flat plate, horizontal plate, over acylinder.

Internal flows – concepts about hydrodynamic and thermal boundary layer anduseofempiricalrelationsforhorizontalpipeflowandannulusflow.

UNIT-IV

Free Convection: Development of Hydrodynamic and thermal boundary layer along a vertical plate - Use of empirical relations for Vertical plates and pipes.

Heat Exchangers: Classification of heat exchangers – overall heat transfer Coefficientandfoulingfactor–ConceptsofLMTDandNTUmethods-Problems using LMTD and NTUmethods.

UNIT-V

Heat Transfer with Phase Change:

Boiling and Condensation: – Pool boiling – Regimes – Calculations on Nucleate boiling, Critical Heat flux and Film boiling

Film wise and drop wise condensation –Nusselt's Theory of Condensation on a Vertical plate-Film condensation on vertical and horizontal cylinders using empirical correlations.

Radiation Heat Transfer : Emission characteristics and laws of black-body radiation – Irradiation – total and monochromatic quantities – laws of Planck, Wien, Kirchoff, Lambert, Stefan and Boltzmann– heat exchange between two blackbodies–conceptsofshapefactor–Emissivity–heatexchangebetween greybodies–radiationshields–electricalanalogyforradiationnetworks.

TEXT BOOK :

1. Fundamentals of Engineering, Heat &Man Transfer-R.C.Sachdeva/ NewAge.
2. Fundamentals of Heat Transfer –Incropera& Dewitt/Johnwiley.
3. Heat& Man Transfer-D.S.Kumar/S.K.Kataria&sons.

REFERENCE BOOKS :

1. Heat Transfer – A Practical Approach – Yunus Cengel, Boles /TMH.
2. Heat Transfer /HOLMAN/TMH.
3. Engineering Heat and Mass Transfer – Sarit K. Das / Dhanpat RaiPub.
4. Heat and Mass Transfer – R. Yadav/CPH.
5. Essential Heat Transfer - Christopher A Long / PearsonEducation.
6. Heat Transfer-P.K.Nag/TMH.
7. Heat Transfer –Ghoshdastidar/Oxford Universitypress.

COURSE OUTCOMES :

1. Ability to analyze the basic heat transfer concepts and their practical relevance in Plates, Cylinders and Sphericalcomponents.
2. Ability to solve practical problems of steady and unsteady state heat transfer.
3. Ability to develop skills to identify suitable Nusselt number empirical correlation for Plates,Cylinders.
4. Abilitytodesignsimpleheatexchangerunitsofmoderatecapacity.
5. Ability to differentiate the phase changes in boiling and condensation, and formulate the radiation heat exchange between twosurfaces.

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J6336) REFRIGERATION AND AIR CONDITIONING

B.TECH. III YEAR–IISEM **L T P C 3 0 03**

Prerequisites: Thermodynamics, Thermal Engineering

COURSE OBJECTIVES :

1. To acquire the knowledge on the terminology used in refrigeration and air-conditioning.
2. To demonstrate the Vapour Compression Refrigerationsystem.
3. Tolearntheperformanceandcycleanalysispertainingtovapourabsorption system.
4. To explain the psychrometric processes of air-conditioningsystems.
5. TodescribetheconceptsofAirConditioningsystemsanditsloadestimation procedures for different Air conditioningsystems.

UNIT - I

Fundamentals of Refrigeration and Refrigerants: Introduction - Necessity and applications, unit of refrigeration and C.O.P - Heat Engine, Refrigerator and Heat pump - Types of Refrigeration systems, and its Applications. Classificationofrefrigerants-Desirableproperties–Nomenclature-Commonly used refrigerants - Alternate refrigerants – Green house effect, global warming

Air Refrigeration System: Introduction - Air refrigeration system working on Reversed Carnot cycle – Air refrigeration system working on Bell Coleman cycle – COP - Open and Dense air systems,Applications.

UNIT - II

Vapour Compression Refrigeration System: Working principle - Simple vapour compression refrigeration cycle – COP - Representation of cycle on T-S and P-h charts - Effect of Sub cooling and Superheating - Actual Vapour compression cycle and its applications.

VCR System Components: Compressors - Classification-Working - Condensers–Classification-Working-Evaporators–Classification-Working, Expansion devices –Types-Working.

UNIT - III

Vapour Absorption Refrigeration System: Description and working ofAqua - Ammonia system - Calculation of maximum COP - Lithium Bromide - Water system - Principle of operation of Three fluid absorption system, Applications.

Steam Jet Refrigeration System and Non Conventional Refrigeration Systems: Principleofworking–Analysis-Applications.Thermoelectric

Refrigeration, Vortex tube refrigeration, adiabatic demagnetization Refrigeration.

UNIT - IV

Psychrometry: Introduction - Psychrometric properties and relations - Psychrometric chart Psychrometric processes - Sensible, Latent and Total heat – Sensible Heat Factor and BypassFactor.

Human Comfort: Thermodynamics of Human body - Effective temperature – Comfort chart.

UNIT - V

Air Conditioning Systems: Introduction - Components of Air conditioning system-ClassificationofAirconditioningsystemsCentralandUnitarysystems - Summer, Winter and Year round systems- Cooling loadestimation.

Design Of Air Condition Systems: Summer air conditioning – ADP-System with Ventilated and re-circulated air with and without bypass factor- RSHF, GSHF and ESHF.

NOTE: Refrigerants & Psychometric properties- by M.L. Mathur & F.S. Mehta data book will be supplied in the exam hall.

TEXT BOOKS :

1. C. P. Arora., Refrigeration and air conditioning -TMH, 2nd Edition, 2000.
2. S. C. Arora, Domkundwar, A course in refrigeration and air conditioning- DhanapatRai&sons5thEdition1997.R.Dossat,PrinciplesofRefrigeration - - Pearson 4th Edition 2001**.**

REFERENCE BOOKS :

1. R. Dossat, Principles of Refrigeration - - Pearson 4th Edition2001.
2. ManoharPrasad,RefrigerationandAirconditioning,NewAgeinternational,2003.
3. Jones W P, “Air Conditioning Engineering”, Elsevier Butterworthy- Heine Mann,2005.
4. Ananthanarayanan.P.N, “Basic Refrigeration and Air Conditioning”, Tata McGraw Hill, 3rd edition, New Delhi,2006.
5. Stocker W F and Jones J W, “Refrigeration & Air Conditioning” McGraw Hill Book Company,1985.

COURSE OUTCOMES :

1. Ability to demonstrate the basic concepts of refrigeration and related performanceparameters.
2. Ability to analyze the performance of Vapour Compressionsystem.
3. Ability to illustrate different Vapour Absorption Refrigerationsystems
4. Ability to demonstrate psychrometric properties and processes used in AirConditioning.
5. Ability to design and develop the Air-conditioning systems for Human comfortconditions.

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(UGC-AUTONOMOUS)

(J6337) ADVANCED STRENGTH OF MATERIALS

B.TECH. III YEAR–IISEM **L T P C 3 0 03**

COURSE OBJECTIVES :

1. To familiarize the concepts of shear center and unsymmetricalbending.
2. To learn the continuous beam problems and curvedbeams.
3. To familiarize the concept of torsion and rotating disc of uniformstrength.
4. To acquire the knowledge columns subjected to eccentric axialloads.
5. To learn concept of contactstresses.

UNIT - I

SHEARCENTERANDUNSYMMETRICALBENDING: Bendingaxisandshear center–Shearcenterforaxi-symmetricandunsymmetricalsections–Bending stressesinbeamssubjectedtonon-symmetricalbending–Deflectionofstraight beams due to non-symmetricalbending.

UNIT - II

CURVEDBEAMTHEORY: Introduction–Stressesincurvedbeams–Winkler Bach theory – Limitations - Design of crane hooks– Closed ring subjected to concentrated and uniformloads.

CONTINUOUSBEAMS:Clapeyron'stheoremofthreemoments–Beamswith constant and varying moment ofinertia**.**

UNIT - III

TORSION: St.Venant's approach - Prandtl approach – Membrane analogy – Torsion of thin walled open and closed sections**.**

CENTRIFUGAL STRESSES: Introduction – Rotating ring – Rotating disc-Rotating disc of uniform strength.

UNIT - IV

COLUMNS: Buckling and stability – Columns with pinned ends – Columns withothersupportconditions-LimitationsofEuler'sformula–Rankin'sformula – Columns with eccentric axial loads – Secantformula**.**

UNIT - V

THIN WALLED PRESSURE VESSELS: Circumferential and longitudinal stresses – Riveted cylindrical boilers –Wire bound thin pipes – Cylinder with hemispherical ends.

CONTACT STRESSES: Methods of computing stress – Deflection of bodies in point and line contactapplications.

TEXT BOOKS:

1. Boresi& Sidebottom Advanced Mechanics of Materials, 6th Edition- Wiley International.
2. L.S.Srinath, Advanced Mechanics of Solids, Tata McGrawHill.

REFERENCE BOOKS :

1. Dr. Sadhu Singh, Strength of Materials, KhannaPublishers.
2. Gere and Timoshenko, Mechanics of Materials, CBS Publishers & Distributers.
3. Seely and Smith, Advanced Mechanics of Materials, John Wiley InternationalEdn.

COURSE OUTCOMES :

1. Ability to develop an approximate solution for the location of shearcentre.
2. Abilitytoanalyzethetorsionproblemsofcircularcrosssection.
3. Ability to analyze the local buckling of thin wall flanges of elasticcolumns.
4. Ability to apply the knowledge of curved beams in the field ofengineering.
5. Abilitytodefinethemaximumprincipleandshearcontactstressesbetween two ideal elasticbodies.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(UGC-AUTONOMOUS)

(J6338) THEORY OF METAL CUTTING

B.TECH. III YEAR–IISEM **L T P C 3 0 03**

COURSE OBJECTIVES :

This course will develop graduates knowledge in/on

1. Geometry of single and multi point cutting tools and various types of tool referencesystems.
2. Mechanicsofmetalcuttingandchipformationmodelsinmetalcutting.
3. Measurement of cutting forces and temperatures in metal cutting operations.
4. Tool wear, tool life, criteria andmachinability.
5. Design of single, multi point cutting tools and presstools.

UNIT-I

Tool Materials: types of tool materials, properties and general guidelines for selection of tool materials.

ToolGeometry:Geometryofsinglepointcuttingtool.Multi-pointcuttingtools-geometryofperipheralmillingcuttersandtwistdrill,Typesofreferencesystem–ASA, ORS, NRS and Maximum Rake System; Conversions of tool angles - ASA and ORSsystem.

UNIT-II

Chip Formation: Classification of cutting operation: orthogonal and oblique machining, Mechanism of chip formation, types of chips, Factors affecting the chip formation, shear plane model, slip line model, relationship for chip geometry.

MechanicsofChipFormation:Forcesinchipformation-Cuttingforceanalysis-Ernst and Merchant analysis-theory of Lee and Shaffer; Effect of cutting parameters on cutting forces, strain and strain rate in metal cutting and energy consideration.

UNIT-III

MeasurementofCuttingForcesandTemperatures:Dynamometer-principle and construction of two, three component lathe dynamometer. Source of heat inmetalcutting-temperaturezones,Estimationofaveragecuttingtemperature, Measurement of cutting temperature- Tool work thermocouple.

Tool Wear and Tool life: Different causes, Types of tool wear, tool wear-measurement; Tool life – Tool life criteria, relation between cutting speed and tool life. Variables affecting tool life.

Machinability: definition, criterion for machinability –influence of variables affecting machinability.

UNIT-IV

Surface finish: effect of machining parameters on surface finish, expression for surface roughness in machining with single point cutting tool.

Cutting Fluids and Economics of Machining: Functions, properties, types and selection; Various types of costs and their estimation, determination of optimumcuttingspeedformaximumproductionrateandminimumcostcriteria.

UNIT-V

Tool Design: Introduction, classification of press tools; Design of Dies- Die construction,Centerofpressure,stockstriplayout,presstonnagecalculations, Designofpiercingdie,blankingdie,progressiveandcompounddies.

Design of cutting tools: Design of single point cutting tool, drill bit, milling cutter and form tools.

TEXT BOOKS :

1. G. K. Lal , ¯Introduction to Machining Science", 3rd Edn., New Age international Publishers, 2012. (Chapters: 2 to9).
2. P.C.Sharma,¯ATextBookProductionEngineering",13thEdn.,SChand& Company, New Delhi, 2009. (Chapters: 1,2,11 and15).

REFERENCE BOOKS :

1. A. Bhattacharya, ¯Metal Cutting Theory and Practice , *Central Book Publishers*, 1st edn., Calcutta,1984.
2. Amitabha Ghosh and A K Mallik, ¯Manufacturing Science", 4thEdn., *Associated East West Press Pvt. Ltd*.,1988.
3. GeoffreyBoothroydandWinstonA.Knight,¯FundamentalsofMachining& Machine Tools", 3rd edn., CRC press,2005.

COURSE OUTCOMES :

Upon completion of this course, graduates will be able to….

1. Identify the cutting tool geometry, tool material, conditions for formation of different chips and their significance in metalcutting.
2. Calculate cutting force in orthogonal machining using merchant circle diagram.
3. Measure the cutting forces, temperatures and their importance role in machining.
4. Evaluatethetoolwear,toollife,machinabilityandproperselectionofcutting fluids for economical metalcutting.
5. Select and design the various cutting and presstools.

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J6339) OPERATION RESEARCH

B.TECH. III YEAR–IISEM **L T P C 3 0 03**

COURSE OBJECTIVES :

1. Graduates will be well grounded in the mathematical, engineering and modeling skills that are the basis for operationsresearch.
2. Graduates will be prepared to apply those skills to the efficient design, analysis, operation and control of complexsystems.
3. Experiences with identifying accessing evaluating and interpreting informationanddatainsupportofassignmentsprojectsorresearch.
4. The central objective of operations research is optimization, i.e., to do things best under the givencircumstances.
5. The objectives should be clearly identified, structured as well as explicitly stated in order to achievegoals.

UNIT-I :

Development-Definition-Characteristics and Phases-Types of models-Operations Research models-applications.

Allocation: Linear Programming Problem Formulation-Graphical solution-Simplex method-Artificial variables techniques: Two-phase method, Big-M method.

UNIT-II:

Transportation Problem-Formulation-Optimal solution, unbalanced transportation problem-Degeneracy.

Assignment Problem- Formulation-Optimal solution-Variants of Assignment Problem –Traveling Salesman problem.

UNIT-III:

Sequencing- Introduction-Flow- Shop sequencing-n jobs through two machines-n jobs three machines-job shop sequencing-two jobs through m machines.

Replacement: Introduction-Replacement of items that deteriorate with time-when money value is not counted and counted-Replacement of items that fail completely- Group Replacement.

UNIT-IV:

Theory of Games: Introduction-Terminology- Solution of games with saddle points and without saddle points-2x2 games- dominance principle-m x 2 & 2 x n games- graphical method.

Inventory: Introduction-Singleitem,Deterministicmodels-Purchaseinventory models with one price break and multiple price breaks – Stochastic models-demand may be discrete variable or continuous variable- Single period model and no setupcost.

UNIT- V: Queuing Theory :

Queuing Theory: Notation and assumption, Poisson Process, queuing models with Poisson Process input - exponential service, infinite queue-infinitesource, single server model, infinite queue-infinite source, arrival theorem – pure birth process and death process M/M/1 Model, finite queue-infinite source, single servermodel.

TEXT BOOKS :

1. Operations Research by J.K. Sharma 4E./MacMilan.
2. Introduction to O.R. by Hillier &Libermann/THH.

REFERENCE BOOKS :

1. Introduction to O.R./Taha/PHI.
2. Operations Research/NVS Raju/SMS Education/ 3rd Revised Edition.
3. OperationsResearch/A.M.Natarajan,P.Balasubramaniam,A.Tamilarasi / Pearson Education.
4. Operations Research/Wagner/ PHIPublications.
5. OperationsResearch/M.V.DurgaPrasad,K.VijayaKumarReddy,J.Suresh Kumar/ CengangeLearning.

COURSE OUTCOMES :

1. Formulate and solve problems as graphs. Develop linear programming (LP) models for optimizationproblems.
2. Identify and express a decision problem in mathematical form and solve it graphically and by simplexmethod.
3. Recognize and formulate transportation, assignment problems and drive their optimalsolution.
4. Graduates understand that game theory is to determine which outcomes are stable according to solutionconcept.
5. Graduates learn to calculate the traffic intensity and the utilization of some queuingsystems.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J6340)TRIBOLOGY

B.TECH. III YEAR–IISEM **L T P C 3 0 03**

COURSE OBJECTIVES :

1. To learn the basic concepts of Tribology and itssignificance.
2. To demonstrate the nature of engineering surfaces, their topography and learn about surface characterizationtechniques.
3. To state the principle of lubrication, theories of hydrodynamic and mixed boundarylubrication.
4. To learn about consequences of wear, wear mechanisms, wear theories and analysis of wearproblems.
5. Toexplaintheprinciplesofbearingselection,itsarrangementinmachines.

UNIT - I

INTRODUTION TO TRIBOLOGY: Tribology and their characteristic feature, analysisandassessmentofsurface,Topography,DeterministicandStochastic, Tribo models for asperity contacts, Techniques of surface examination, and Technological properties ofsurfaces.

FRICTION AND WEAR: Types of friction, Theories of friction, Study of current concepts of boundary friction and dry friction, friction reducing measures. Causes of wear, Types of wear, Mechanism of various types of wear, laws of wear, effects of wear.

UNIT - II

VISCOSITY AND LUBRICANTS: Viscosity, flow of fluids, viscosity and its variation - absolute and kinematic viscosity, temperature variation, viscosity indexdeterminationofviscosity,differentviscometersused,Viscositystandards, Lubricantsandtheirphysicalproperties,Varioustheoriesoflubrication.

UNIT - III

THEORYOFHYDRODYNAMICLUBRICATION: Petroffsequation,Reynolds's equation in two dimensions, bearing modulus, Somerfield number, Effects of side leakage, pressure, flow, load capacity and friction calculations, heat balance, minimum oil film thickness, oil whip andwhirl.

UNIT – IV

THEORY OF HYDROSTATIC LUBRICATION: Hydrostatic step bearing, pivotedpadthrustbearing,hydrostaticlifts,hydrostaticsqueezefilms,pressure, flow, load capacity and friction calculations, oil rings, pressure feed bearing, partial bearings, externally pressurized bearings, Air lubricated bearing, Advantages anddisadvantages.

UNIT - V

ANTI-FRICTION BEARINGSAND BEARING MATERIALS : Anti-friction bearings, types, Advantages and disadvantages, General requirements of bearing materials, types of bearing materials, General bearing design considerations.

TEXT BOOKS :

1. Basu S.K, SenGupta and Ahuja, Fundamentals of Tribology PHI Learning Private Limited,2009.
2. Gwidon W Stachowiak and Andrew W Batchlor, Engineering Tribology, 3rd Edition,Elsevier.

REFERENCE BOOKS :

1. Sushil Kumar Srivatsava, Tribology in Industry, S. Chand&Co.
2. B.C. Majumdar, Tribology, S.Chand&Co.
3. Rabinowicz, Friction and Wear of materials, John willey&Sons.
4. Halling. J, Macmillian, Principles ofTribology.
5. Williams .J.A, Engineering Tribology, Oxford UniversityPress.

COURSE OUTCOMES :

1. Capability to apply the concepts of principles of Tribology with particular emphasis on lubricatedsystems.
2. Graduateswillbeabletoanalyzethevariousdesignparametersofbearings under different loads, temperatureconditions.
3. Abilitytocalculatethewearpercentagebyusingdifferentweartheories.
4. Ability to identify the wear mechanisms on rubbingsurfaces.
5. Ability to design the various types of antifriction bearings, and general requirements of bearingmaterials.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(UGC-AUTONOMOUS)

(J6341) ADDITIVE MANUFACTURING

B.TECH. III YEAR–IISEM **L T P C 3 0 03**

COURSE OBJECTIVES :

This course will develop graduates knowledge in/on

1. Basics of rapid prototyping process and liquid based rapid prototyping systems.
2. Solid based rapid prototypingsystems.
3. Powder based rapid prototypingsystems.
4. Extrusion based systems, errors in RP processes and rapid tooling techniques.
5. Therapidprototypingdataformatsandapplicationsofrapidprototyping.

UNIT-I

Introduction: Introduction to Prototyping, Traditional Prototyping and Rapid Prototyping fundamentals of Rapid prototyping, Advantages and limitations of RP,DistinctionbetweenRPandCNC,otherrelatedtechnologies,Classification of RP, rapid prototyping processchain.

Liquid-based Rapid Prototyping Systems: Stereo lithography Apparatus (SLA): Process, working principle, photopolymers, photo polymerization, Layering technology, laser and laser scanning, Applications, Advantages and Disadvantages.

UNIT-II

Solid ground curing (SGC): Process, working principle, Applications, Advantages and Disadvantages.

Solid-based Rapid Prototyping Systems: Laminated Object Manufacturing (LOM) Process, working principle, Applications, Advantages and Disadvantages.

UNIT-III

Fused Deposition Modeling (FDM): Process, working principle, Applications, Advantages and Disadvantages.

Powder Based Rapid Prototyping Systems: Selective laser Sintering(SLS), Powderfusionmechanismandpowderhandling,ElectronBeammelting(EBM), Applications of Powder Bed Fusion Processes. Fraunhofer's Multiphase Jet Solidification, (MJS) , Therics inc.'s theriform technology,Three dimensional Printing(3DP):workingprinciple,Applications,AdvantagesandDisadvantages.

UNIT-IV

Extrusion-Based RP Systems: Fused Deposition Modeling (FDM), Principles, Plotting and path control, Applications of Extrusion-Based Processes.

RapidTooling: ConventionalToolingandRapidTooling,ClassificationofRapid Tooling, Direct and Indirect Tooling Methods, Soft and Hard Tooling methods Errors in RP Process: Pre-processing, Processing, Post-Processing Errors, Part building errors in SLA,SLS.

UNIT-V

Rapid Prototyping Data Formats: STL Format, STL File Problems, ConsequenceofBuildingValidandInvalidTessellatedModels,STLfileRepairs: Generic Solution, Other Translators, Newly ProposedFormats.

RP Applications: Application in Design, Application in Engineering, Analysis andPlanning,AerospaceIndustry,AutomotiveIndustry,JewelryIndustry,Coin Industry, GIS application, Arts and Architecture and RP Medical and BioengineeringApplications.

TEXT BOOKS:

1. Chua Chee Kai., Leong Kah Fai., Chu Sing Lim, Rapid Prototyping: Principles and Applications in Manufacturing, 2nd edn., World Scientific, 2003.

REFERENCE BOOKS :

1. Ian Gibson., David W Rosen., Brent Stucker., Additive Manufacturing Technologies: Rapid Prototyping to Direct Digital Manufacturing, 1st edn., Springer,2010.
2. Pham D T and Dimov S S, “Rapid Manufacturing”, 1st edn., Verlag,2001.

COURSE OUTCOMES :

Upon completion of this course, graduates will be able to

1. Explain the process, working principle and application of liquid base RP processes.
2. Explain the process, working principle and application of solid base RP processes.
3. Explain the process, working principle and application of powder base RP processes.
4. Explain the process and working principles of extrusion based RP processes.
5. Describe the rapid prototyping data formats and applications of rapid prototyping.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J6325) HEAT TRANSFER LAB

B.TECH. III YEAR–IISEM **L T P C 0 0 3 1.5**

Prerequisites: Study the heat transfer subject thoroughly.

COURSE OBJECTIVES :

The objective of this heat transfer lab is to know the practical knowledge of various heat transfer modes and its applications.

List of experiments :

1. Composite Slab Apparatus — Overall heat transferco-efficient.
2. Heat transfer through laggedpipe.
3. Heat Transfer through a ConcentricSphere.
4. Thermal Conductivity of given metalrod.
5. Heat transfer inpin-fin.
6. Experiment on Transient HeatConduction.
7. Heat transfer in forced convectionapparatus.
8. Heat transfer in naturalconvection.
9. Parallel and counter flow heatexchange.
10. Emissivityapparatus.
11. Stefan BoltzmannApparatus.
12. Critical Heat fluxapparatus.
13. Study of heat pipe and itsdemonstration.
14. Film and Drop wise condensationapparatus.

COURSE OUTCOMES :

1. Ability to obtain the practical knowledge of heat transfer by conduction, convection, andradiations.
2. Abilitytogainknowledgeabouthowheattransferwilltakeplacepractically.
3. Abilitytoobtainhowheattransfertakesplaceinextendedsurfaces.
4. Ability to analyze about phase changes in different applications like heat exchanger, boiling andcondensation.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J6326) PRODUCTION DRAWING PRACTICE

B.TECH. III YEAR–IISEM **L T P C 0 0 31.5**

COURSE OBJECTIVES :

Graduates will be able to understand

1. The need and the importance of productiondrawing.
2. How to make part drawing from given assemblydrawings.
3. Indicationofsize,formandpositionaltolerancesonthedrawingsheets.
4. Surfacefinishandheattreatmentprocessonthedrawingsheets.
5. Notations, symbols and abbreviations on productiondrawings.

UNIT-I

IntroductiontoProductionDrawing:TypesofDrawingsandtheiruses,Format of drawing sheet, title block - Machine tools elements, methods of indicating notes ondrawing**.**

UNIT-II

Limits and Fits: Basic definition of terms, alpha numeric designation of limits/ fits, calculation of limits and tolerances - Types of fits, interchangeability and selective assembly - Exercises involving selection/interpretation of fits and calculation of limits.

UNIT-III

Production Drawing: Conventional practices of indicating tolerances on size and geometrical form, Position - Surface finish, surface treatments.

UNIT-IV

Partdrawings: Partdrawingsfromassembleddrawings(10No's-outofwhich student should draw a minimum of 8 drawings) – (Specification and indication of the above features on the drawings) - Stuffing box, Screw jack, I.C engine connecting rod, Revolving center, Square tool post, Single tool post, Steam enginecrosshead,Drilljig(platetype),Nonreturnvalve,Blowoffcock

UNIT-V

Writing Process sheets, tolerances and surface finish for different components such as Bevel Gear, Flange & Pinion shaft.

Part drawing using Computer Aided Drafting by using AutoCAD software.

TEXT BOOKS:

1. K.L. Narayana, P. Kannaiah and K. Venkat Reddy, Production Drawing, New Age Intl., (P) Ltd., Revised Edition,1997**.**

2. P. Narasimha Reddy, T.A. Janardhan Reddy and C. Srinivasa Rao, Production DrawingPractice, Hitech Publishers,2001.

REFERENCE BOOKS :

1. Geometric dimensioning and tolerancing- James D. Meadows/ B.S Publications.
2. Engineering Metrology, R.K. Jain, KhannaPublications.

COURSE OUTCOMES :

On completion of the course the graduates will develop abilities to

1. Draw part drawings from given assembly drawings of machineparts.
2. Indicatetolerancevaluesonthepartsdrawnonsheetasperalphanumeric codes for given assemblydrawings.
3. Indicate form tolerances and position tolerances on the parts drawn on thesheetasperuniversallyacceptednormsforagivenassemblydrawing.
4. Indicatevaluesofsurfacefinishedandheattreatmentprocessontheparts drawn for a given assemblydrawings.
5. Write process sheet for every part that is drawn from given assembly drawings.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J7327)METROLOGY AND INSTRUMENTATION

B.TECH. IV YEAR–ISEM **L T P C 2 1 0 3**

COURSE OBJECTIVES :

1. To Learn the basics of measurement system and experimentalerrors.
2. To differentiate about linear, angular and optical measuringinstruments.
3. To familiarize with surface roughness measurement and limits andfits.
4. To describe about measurement of Displacement, Stress and Strain, and Force andTorque.
5. To explain about measurement of Pressure, Fluid flow andTemperature.

UNIT- I

SystemoflimitsandFits: Theoryoflimits,fitsandtolerances–Fundamental deviation – types – Grades of tolerances – Fits – Types of fits - Hole basis and shaftbasissystems–Interchangeabilityandselectiveassembly.LimitGauges - Taylor'sprinciple–GOandNOGOgauges–plugandringgauges.

Linear, Angle, Taper and Optical Measurements: Slip gauges – Dial indicators – Micrometer. Bevel protractor – Angle slip gauges —sine bar – Optical flats – NPL Interferometer.

UNIT – II

Surface roughness measurement : Surface roughness and surface texture – Numerical assessment of surface finish – CLA – RMS- Ten point height of irregularity - Measuring Instruments - Profilograph –Talysurf.

Screw Thread Measurement and Gear Measurement: Element of measurement-errors in Screw Thread –Measurement of effective diameter using 2-wire and 3-wire method, angle of thread and thread pitch. Gear tooth profilemeasurement,measurementofdiameter,pitchpressureangleandtooth thickness.

UNIT-III

Basic principle of measurement-Generalized configuration and functional description of measuring instruments. Static and dynamic characteristics.

Displacementmeasurement: Theoryandconstructionofvarioustransducers to measure displacement - Piezo electric, Inductive, Capacitance and Resistance typetransducers.

Strain measurement: Various types of strain measurements, electrical resistance strain gauge, gauge factor - configurations to measure tensile, compressive and bending strains.

UNIT-IV

TemperatureMeasurement:variousprinciplesoftemperaturemeasurements, expansion thermometers, resistancethermometers, thermistors, thermocouples,pyrometers.

Pressure Measurement: classification-different principles used. Bourdon pressuregauges,bellows,anddiaphragmgauges.Lowpressuremeasurement-thermal conductivity gauges, ionization pressure gauges, McLeod pressure gauge.

UNIT –V

Measurement of Speed: Mechanical and electrical tachometers,Stroboscope and non contact typetachometers.

Measurement of acceleration and vibration: Principles of seismic instruments-vibrometer and Accelerometer.

TEXT BOOKS :

1. EngineeringMetrologybyR.K.Jain,20thed.,KhannaPublishersNewDelhi, 2009.
2. Instrumentation and mechanical measurements by A.K.Tayal, Galgotiya publications.

REFERENCE BOOKS :

1. A.K, Sawhneypuneet " A course in Mechanical Measurements and instrumentation control" DhanpatRai publications, 12thEdition,2012.
2. J.P. Holman, Experimental Methods for Engineers, McGrawHill.
3. Ernest O. Doebelin, Measurement systems Application and Design, International Student Edition, 4thEdition, McGraw-Hill Book Company, 1998.
4. M. Mahajan, A text book of Metrology, DhanpatRai&Co.
5. I C Gupta, Engineering Metrology,DanpathRai.

COURSE OUTCOMES :

1. Ability to apply different measuring techniques in quality control departmentsofindustriesandtoensurequalityofproducts.
2. Ability to design and use effectively the instruments for measure linear, angular andoptical.
3. Ability to analyze measuring systems of surface roughness and perform alignment/acceptance testeffectively.
4. Ability to design and use effectively the instruments for measuring stress, strain, force, torqueetc.
5. Ability to analyze measuring systems of Pressure, Fluid flow and Temperature.

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J7329) CAD/CAM

B.TECH. IV YEAR–ISEM **L T P C 3 0 03**

COURSE OBJECTIVES :

1. To summarize the appraisal of computers in design and manufacturing fields.
2. To explain about the modeling of geometry using various entities and methodology.
3. To learn about principles and different aspects of Numerical control and partprogramming.
4. To describe the requisition for Group technology and FMS for advanced manufacturingfirms.
5. To illustrates about distinctive CAQC techniques and implementation of CIM inmanufacturing.

UNIT -I

FUNDAMENTALS OF CAD: Introduction – The design process – The application of computers for design- Engineering data management– Benefits ofCAD.

COMPUTERGRAPHICS: Rasterscangraphics-Coordinatesystems-Database structure for graphics modeling-Transformation of geometry: Translation, scaling, reflection, rotation, homogeneous transformations Concatenated transformations.

UNIT – II

GEOMETRIC MODELING: REPRESENTATION OF CURVES**:** Introduction, wireframe models, wireframe entities, curve representation, parametric representation of analytical curves, parametric representation of Bezier and B-Spline curves.

REPRESENTATION OF SURFACES AND SOLIDS: Introduction to surfaces, surface models surface entities. Introduction to solids, solid models, solid entities, Fundamentals of solid modeling, Boundary representation, CSG representation, sweep representation.

UNIT – III

COMPUTER NUMERICAL CONTROL: Introduction – NC modes – NCelements-NCCoordinatesystems–StructureofCNCMachineTools–Spindle design –Spindle drives – Feed drives – actuationsystems.

PART PROGRAMMING: Part programming Fundamentals – Manual part programming- computer aided part programming: APT Language.

UNIT - IV

GROUP TECHNOLOGY: Introduction – part families – part classifications and coding – OPITZ system – MICLASS system – CODE system – GT Machine cells – Benefits of GT – CAPP: Retrieval type and generative type.

FLEXIBLE MANUFACTURING SYSTEM: Introduction – FMS components – Benefits of FMS – FMS planning and implementation Issues.

UNIT - V

COMPUTER AIDED QUALITY CONTROL: Introduction –computers in QC – Contact Inspection methods – Non contact inspection methods: optical, non optical – Computer Aided Testing-Integration of CAQC with CAD/CAM.

COMPUTER INTEGRATED MANUFACTURING SYSTEMS: Introduction– Integration- CIM implementation – Benefits of CIM – Lean manufacturing.

TEXT BOOKS :

1. MikelP.Groover and Emory W.Zimmers, CAD/CAM-prentice Hall of India private Ltd.New Delhi, 20thedition, May2010.
2. Ibrahim Zeid, Mastering CAD/CAM, TATA McGraw-Hill publishing CO.Ltd, NewDelhi2011.

REFERENCE BOOKS :

1. PNRao,CAD/CAMPrincipleandapplications,Tata McGrawHillEducation Private Ltd,New Delhi,8th edition2013.
2. P.Radhakrishnan,S.Subramanyam&V.Raju,CAD/CAM/CIM,New Age International Publishers,3rd edition2010.
3. MikelP.Groover,Automaiton,Production Systems and ComputerIntegrated Manufacturing, Prentice Hall of India private Ltd.New Delhi, 3rd edition, May2008.
4. IbrahimZeidandR.Sivasubramanian,CAD/CAMtheoryandpractice,Tata McGraw Hill publishing Co. Ltd,New Delhi2009.
5. Tien-Chienchang, Richard A.Wysk and HSU-Pin (Ben) Wang, “Computer AidedManufacturing”,3rdedition,2006.
6. Michael E.Mortenson,”Geometric Modelling”, John Wiley and sons, Inc., James D.Foley, Andries Van Dam, Steven K.Feiner, John F. Hughes, “Computer Graphics Principles and Practice”, Addison-Wiley publishing Company,2nd Edition2007.

COURSE OUTCOMES :

1. Ability to apply CAD/CAM principles for geometric modelling, design and manufacturing.
2. Ability to generate codes for part profiles and can accomplishmachining.
3. Ability to codify the part using GT codes and can apply GT system in automated manufacturingfirm.
4. Ability to familiarize cognizant of CAQC techniques that are to be applied inmanufacturing.
5. Ability to comprehend the applications of Computer Integrated Manufacturing.

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J7342) POWER PLANT ENGINEERING

B.TECH. IV YEAR–ISEM **L T P C 3 0 03**

Prerequisites: Thermal Engineering-II

COURSE OBJECTIVES :

1. To learn about features and performance of a thermal power plantcycle.
2. To distinguishes about diesel engine and gas turbine powerplants.
3. To illustrate about the hydroelectric and nuclear powerplants.
4. To explain about nonconventional powerplants.
5. To interpret the procedure of power tariff calculations and economics of powergenerations.

UNIT - I

Introduction: Various Energy sources - Types of power plants - Resources and Development of Power in India.

Steam power plant: Plant Layout - Working of Different circuits - Types of Coal - Coal handling systems - Coal storage - Overfeed and underfeed fuel beds-PulverizedFuelburningsystem-Ashhandlingsystems-Dustcollection and its disposal - Mechanical type - Electrostatic Precipitator - Cooling Towers and heatrejection.

UNIT - II

Dieselpowerplant: Plantlayoutwithauxiliaries-FuelstorageandFuelsupply system-Airsupplysystem-Exhaustsystem-Watercoolingsystem-Lubrication system - Starting system - Supercharging - Advantages and Disadvantages of Diesel plants over Thermalplants.

Gas turbine plant: Introduction - Classification - Layout with auxiliaries - Principles of working of Closed and Open cycle gas turbines - Combined cycle power plants and comparison.

UNIT - III

Hydro electric power plant: Hydrology - Hydrological cycle – Rainfall - Run off Hydrograph - Flow duration curve - Mass curve - Site selection of hydro plant - Typical layout - Different types of hydro plants.

Nuclear power plant: Nuclear Fission and Fusion - Nuclear Fuels – Breeding - Components of Reactor - Types of Nuclear Reactors - Pressurized water reactor(PWR) - Boiling water reactor(BWR) - CANDU reactor - Gas cooled reactor - Liquid metal cooled reactor - Fast Breeder Reactor - Nuclear waste and itsDisposal.

UNIT - IV

Power from non-conventional sources: Solar power plants - Utilization of Solar collectors - Principle of working of Wind energy – Types – HAWT, VAWT - TidalEnergy.

Direct energy conversion system: Solar cell - Fuel cell - Thermo Electric and Thermo ionic conversion system - MHDgeneration.

UNIT - V

Power plant economics: Fixed cost - Operating cost - Fluctuating loads - GeneralarrangementofPowerDistribution-Loadcurves-Loaddurationcurve - Connected load - Maximum demand - Demand factor - Average load - Load factor - Diversity factor - Plant capacity factor.

Pollution and control: Introduction - Particulate and gaseous pollutants - Air andWaterpollutionbythermalpowerplantsanditscontrol-Acidrains-Methods to controlpollution.

TEXT BOOKS :

1. P.C.Sharma,PowerPlantEngineering,9thRevised&ReprintEdition2012 S.K.Kataria&sons.
2. Arora & Domkundwar, A course in Power Plant Engineering- Dhanpat Rai & Company 5th Revised Reprint Edition,2004.

REFERENCE BOOKS :

1. R.K.Rajput, a Text book of Power Plant Engineering, Laxmi Publications, 2nd Edition2001.
2. P.K.Nag, Power Plant Engineering, 3rd Edition, 2008 TMH, NewDelhi.
3. M.M.ElWakil, Power plant technology, 3rd Edition 2010TMH.
4. G.R.Nagpal, Power plant engineering, Khanna Publishers.14th Edition 2000.
5. K.K.Ramalingam, “Power Plant Engineering “, Scitech Publications,2002.
6. G.D.Rai,“IntroductiontoPowerPlanttechnology”KhannaPublishers,1995.

COURSE OUTCOMES :

1. Ability to develop awareness on different types of power generation systems.
2. Abilitytodifferentiateconventionalandnonconventionalpowerplants.
3. Abilitytodistinguishbetweenpollutingandnonpollutingpowerplants.
4. Ability to acquire knowledge on the economic viability of various power generationsystems.
5. Ability to apply the power plant engineering concepts practically indeveloping low costsystems.

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J7343) AUTOMATION IN MANUFACTURING

B.TECH. IV YEAR–ISEM **L T P C 3 0 03**

COURSE OBJECTIVES :

1. ToEmphasisofAutomationandProductionsystemsinmanufacturingarea.
2. To Automate in Material handling systems, transport systems, storage systems.
3. To Frame references on manufacturing systems and manufacturing cells inproduction.
4. To explain distinctive functions of Manual and automated productionlines.
5. To Optimize in Adaptive Control systems and applications of Adaptive Controlsystems.

UNIT – I

INTRODUCTION TO AUTOMATION: Basic elements of automated system, advanced automation functions, levels of automation. Production System Facilities, Manufacturing Support systems, Automation in Production systems, Automation principles & Strategies.

UNIT – II

AUTOMATED MATERIAL HANDLING: Types of equipment, considerations inmaterialsystemdesign,thetenprinciplesofmaterialhandling.

MATERIAL TRANSPORT SYSTEMS: Industrial trucks, automated guided vehicle systems, rail guided vehicles, conveyor systems, cranes and hoists.

STORAGE SYSTEMS: Storage system performance, storage location strategies conventional storage methods and equipment, automated storage systems.

UNIT – III

INTRODUCTION TO MANUFACTURING SYSTEMS: Components of a Manufacturing system, Classification of Manufacturing Systems, overview of Classification Scheme, manufacturing progress functions.

SINGLE STATION MANUFACTURING CELLS: Single Station Manned Workstations and Single Station Automated Cells, applications, analysis of single station cells.

UNIT – IV

MANUAL ASSEMBLY LINES: fundamentals, alternative assembly systems, design for assembly, analysis of single model assembly lines, line balancing algorithms, mixed model assembly lines.

AUTOMATED FLOW LINES: Fundamentals of automated production lines, applications of automated production lines, analysis of transfer lines with no internal storage, analysis of transfer lines with storage buffers.

UNIT – V

AUTOMATED ASSEMBLY SYSTEMS: Fundamentals, design for automated assembly, quantitative analysis of assembly systems.

ADAPTIVE CONTROL SYSTEMS: Introduction, adaptive control with optimization,Adaptivecontrolwithconstraints,ApplicationofA.C.inMachining operations. Use of various parameters such as cutting force, Temperatures, vibration and acousticemission.

TEXT BOOKS :

1. MikellP.Groover,"Automation,Productionsystemsandcomputerintegrated manufacturing", prentice Hall of India Private Ltd, New Delhi,3rd edition, 2008.
2. Yoramkorem,"Computer Control of Manufacturing Systems",Tata McGraw Hill publishing company private Ltd,NewDelhi.

REFERENCE BOOKS :

1. P.Radhakrishan, S.Subramanyan, V.Raju, "CAD/CAM/CIM", New age International publishers, 3rd edition,2010.
2. PessanDavidW,"IndustrialAutomation"firstedition,Wileypublishers,2011.
3. W.Buekinsham"Automation", PHI publications**.**

COURSE OUTCOMES :

1. Ability to Accomplish automation in manufacturingindustry.
2. AbilitytoapplythetechniquesofAutomationmaterialhandlingandstorage equipments depending upon theapplication.
3. Ability to analyze progress functions of manufacturingsystems.
4. Ability to apply various algorithms to solve manual and automated flow lines.
5. AbilitytoapplytheoptimizedAdaptiveControlSysteminautomation.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J7344) MECHANICS OF COMPOSITE MATERIALS

B.TECH. IV YEAR–ISEM **L T P C 3 0 03**

COURSE OBJECTIVES :

1. To explain problems on macromechanical behavior oflamina.
2. To discriminates problems on micromechanical behavior oflamina.
3. To analyze problems on macromechanical behavior oflaminate.
4. To identifies problems on bending, buckling, and vibration of laminated plates andbeams.
5. To obtain laminate behavior using a computerprogram.

UNIT I

Introduction to composite materials: Definition-Matrix materials-polymers-metals-ceramics - Reinforcements: Particles, whiskers, inorganic fibers, metal filaments- ceramic fibers- fiber fabrication- natural composite wood, Jute - Advantages and drawbacks of composites over monolithic materials. Mechanical properties and applications of composites, Particulate-Reinforced composite Materials, Dispersion-Strengthened composite, Fiber-reinforced composites Rule of mixtures-Characteristics of fiber-Reinforced composites, Manufacturing fiber and composites.

UNIT II

Manufacturing of composites: Manufacturing of Polymer Matrix Composites (PMCs)-handlay-up, spray technique, filament winding, Pultrusion, Resin Transfer Moulding (RTM)-, bag moulding, injection moulding, Sandwich Mould Composites (SMC) – Manufacturing of Metal Matrix Composites (MMCs) – Solid state, liquid state,vapour state processing, Manufacturing of Ceramic Matrix Composites (CMCs) –hot pressing-reaction bonding process-infiltration technique, direct oxidation- interfaces.

UNIT III

Introduction,laminaconstitutiveequations: LaminaConstitutiveEquations: Lamina Assumptions – Macroscopic Viewpoint. Generalized Hooke's Law. Reduction to Homogeneous Orthotropic Lamina – Isotropic limit case, Orthotropic Stiffness matrix (Qij), Definition of stress and Moment Resultants. Strain Displacement relations. Basic Assumptions of Laminated anisotropic plates. Laminate Constitutive Equations – Coupling Interactions, Balanced Laminates, Symmetric Laminates, Angle Ply Laminates, Cross Ply Laminates. Laminate Structural Moduli. Evaluation of Lamina Properties from Laminate Tests. Quasi-Isotropic Laminates. Determination of Lamina stresses within Laminates.

UNIT IV

Lamina strength analysis and analysis of laminated flat plates: Introduction – Maximum Stress and Strain Criteria. Von-Misses Yield criterion for Isotropic Materials.GeneralizedHill'sCriterionforAnisotropicmaterials.Tsai-Hill'sFailure Criterion for Composites. Tensor Polynomial (Tsai-Wu) Failure criterion. Prediction of laminate Failure Equilibrium Equations of Motion. EnergyFormulations. Static Bending Analysis. Buckling Analysis. Free Vibrations – NaturalFrequencies.

UNIT V

Thermal analysis: Assumption of Constant Co-efficient of Thermal Expansion (C.T.E.) – Modification of Hooke's Law. Modification of Laminate Constitutive Equations. Orthotropic Lamina C.T.E's. C.T.E's for special Laminate Configurations–Unidirectional,Off-axis,SymmetricBalancedLaminates,Zero C.T.E laminates, Thermally Quasi-Isotropic Laminates.

TEXT BOOKS :

1. Madhujit Mukhopadhyay, "Mechanics of Composite Materials and Structures",UniversityPress(India)Pvt.Ltd.,Hyderabad,2004(Reprinted 2008).
2. Chung, Deborah D.L., "Composite Materials: Science and Applications", Ane Books Pvt. Ltd./Springer, New Delhi, 1st Indian Reprint,2009.

REFERENCE BOOKS :

1. Gibson, R.F., Principles of Composite Material Mechanics, McGraw-Hill, 1994, Second Edition – CRC press inprogress.
2. Hyer, M.W., "Stress Analysis of Fiber – Reinforced Composite Materials", McGraw-Hill,1998.
3. Issac M. Daniel and Ori Ishai, "Engineering Mechanics of Composite Materials",OxfordUniversityPress-2006,FirstIndianEdition–2007.
4. Mallick,P.K.,Fiber–"ReinforcedComposites:Materials,Manufacturingand Design", Maneel Dekker Inc,1993.
5. Halpin, J.C., "Primer on Composite Materials, Analysis", Techomic Publishing Co.,1984.
6. Agarwal, B.D., and Broutman L.J., "Analysis and Performance of Fiber Composites", John Wiley and Sons, New York,1990.
7. Mallick,P.K.andNewman,S.,(edition),"CompositeMaterialsTechnology: Processes and Properties", Hansen Publisher, Munish,1990.

COURSE OUTCOMES :

1. Ability to categorizes of types, manufacturing processes, and applications of compositematerials.
2. Abilitytoidentifiesproblemsonmacromechanicalbehavioroflamina.
3. Abilitytoanalyzeproblemsonmicromechanicalbehavioroflamina.
4. Abilitytoanalyzeproblemsonmacromechanicalbehavioroflaminate.
5. Abilitytoanalyzeproblemsonbending,buckling,andvibrationoflaminated plates andbeams.

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J7328) METROLOGY AND INSTRUMENTATION LAB

B.TECH. IV YEAR–ISEM **L T P C 0 0 31.5**

COURSE OBJECTIVES :

1. To learn the main principle on which different instruments operate and provide hands on experience onthem.
2. To generate knowledge and skill in use of precisioninstruments.
3. To learn a basic understanding of various instruments used in linear and angularmeasurements.
4. To get familiarize with usage of tool makersmicroscope.
5. Tolearnabasicunderstandingoftheinstrumentsusedformeasurement of pressure, temperature, flowetc.

List of experiments to perform :

Section (A) :

1. Measurementoflengths,heights,diametersbyverniercalipersmicrometer etc.
2. Measurementofboresbyinternalmicrometersanddialboreindicators.
3. Use of gear teeth, vernier calipers and checking the chordal addendum and chordal height and tooth thickness of spurgear.
4. Machine tool alignment of test on thelathe.
5. Machine tool alignment test on millingmachine.
6. Tool maker's microscope and itsapplications.
7. Angle and taper measurements by Bevel protractor, Sine bars,etc.
8. Effective diameter of screw thread measurement by Two wire/ Three wire method/Tool makersmicroscope.
9. Surface roughness measurement by TalySurf.

Section (B) :

1. Calibration of pressureGauge.
2. Calibration of transducer for temperaturemeasurement.
3. Study and calibration of LVDT transducer for displacementmeasurement.
4. Calibration of strainmeasurement.
5. Calibration of thermocouple for temperaturemeasurement.
6. Calibration of capacitive transducer for angulardisplacement.

7. Study and calibration of photo and magnetic speed pickups for the measurement ofspeed.
8. Calibration of resistance temperature detector for temperature measurement.
9. Study and calibration of a rotometer for flowmeasurement.
10. Study and use of a Seismic pickup for the measurement of vibration amplitude of an engine bed at variousloads.
11. Study and calibration of McLeod gauge for low pressure.

Note: Any 6 Experiments to be performed from each section.

COURSE OUTCOMES :

1. Abilitytodevelopqualitystandardsofengineeringproductsinindustries.
2. Ability to demonstrate work in quality control departments of industries and to ensure quality ofproducts.
3. Abilitytoanalyzethemeasurementofthesurfaceroughnessandperform alignmenttests.
4. Ability to develop the ability to apply the principles in instruments and measuringtechniques.
5. Ability to demonstrate work in designing the instrumentation for a particular purpose and special purposedevices.

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JAYAMUKHIINSTITUTEOFTECHNOLOGICALSCIENCES
(UGC-AUTONOMOUS)

(J7330) CAD/CAM LAB

B.TECH. IV YEAR–ISEM **L T P C 0 0 31.5**

COURSE OBJECTIVES :

1. To design of part modeling andassembly.
2. To model complex shapes including freeform curves andsurfaces.
3. To analysis of various parts using applicationsoftware.
4. ToImplementCNCprogramsformillingandturningmachiningoperations, - Create a computer aided manufacturing (CAM) model and generate the machining codes automatically using the CAM system.

CAD :

- Solid modeling –Extrude, Revolve,Sweep…etc.
- Surface modeling –Extrude, Sweep, Trim...etc and Mesh of curves, Free formetc.
- Feature manipulation – Copy, Mirror, Edit, Pattern, Suppress, History operationsetc.
- Assembly-Constraints, Exploded Views, Interferencecheck.
- Drawing - Layouts, Standard &Sectional views, plotting. Exercises in Modeling, Assembly and Drawing of Mechanical Components - using Parametric and feature based Packages likePro/E.

FEA :

Structural analysis, thermal analysis and Modal analysis of various parts using ANSYS.

CAM :

- Study of G-Codes and M-Codes used in CNCMachines.
- CNC Part Programming by using G-Codes andM-Codes.
- Development of CNC code for free form and sculptured surfaces using CAMpackages.
- Machining of simple components on CNC Lathe and CNC Mill by CNC Programming.

Software Packages: Pro/E, ANSYS, Cut viewer etc.

COURSE OUTCOMES :

1. AbletomodelandassemblethevariouspartsusingPro/Esoftware.
2. AbletoModelcomplexshapesincludingfreeformcurvesandsurfaces.
3. Able to perform analysis of various parts using ANSYSsoftware.
4. Able to Implement CNC programs for milling and turning machining operations, - Create a computer aided manufacturing (CAM) model and generatethemachiningcodesautomaticallyusingtheCAMsystem.

JAYAMUKHIINSTITUTEOFTECHNOLOGICALSCIENCES
(UGC-AUTONOMOUS)

(J8345) UNCONVENTIONAL MACHINING PROCESSES

B.TECH. IV YEAR–IISEM **L T P C 3 0 03**

COURSE OBJECTIVES :

1. To explain the concepts of various unconventional machiningprocesses.
2. To familiarize the use of ultrasonic and abrasive jets metal removal processesparameters.
3. To get acquitted with electrochemical machiningprocesses.
4. To familiarize the use of Thermal metal removal processes in unconventional machiningprocess.
5. To familiarize the use of EBM,LBM and Plasma metal removalprocesses.

UNIT – I

Introduction – Need for non-traditional machining methods-classification of modern machining processes – considerations in process selection. materials and applications.

UNIT – II

Ultrasonicmachining–Elementsoftheprocess,mechanicsofmetalremoval process parameters,economic considerations, applications and limitations, recentdevelopment.

Abrasivejetmachining,Waterjetmachiningandabrasivewaterjetmachine, Magnetic abrasive finishing: Basic principles, equipments, process variables, and mechanics of metal removal, application andlimitations.
Chemical machining: principle- maskants –etchants- applications.

UNIT - III

Electro–chemical processes: Fundamentals of electro chemical machining, electrochemicalgrinding,electrochemicalhoninganddeburringprocess,metal removal rate in ECM, Tool design, and Surface finish and accuracy. Economic aspects of ECM. Problems for estimation of metal removal rate. Advantages, limitations and applications ofECM.

UNIT - IV

Thermal metal removal processes : General Principle and applications of Electric Discharge Machining, Electric Discharge Grinding and electric dischargewirecuttingprocesses–PowercircuitsforEDM,Mechanicsofmetal removal in EDM, Process parameters, selection of tool electrode and dielectric fluids,methodssurfacefinishandmachiningaccuracy,characteristicsofspark eroded surface and machine tool selection. Wire EDM, principle,applications.

UNIT – V

Electron beam machining: Generation and control of electron beam for machining, theory of electron beam machining, comparison of thermal and non-thermal processes, influence of process parameters. Advantages, limitations and applications of EBM.

LaserBeamMachining:–GeneralPrincipleandapplicationofthermalfeatures, cutting speed and accuracy ofcut.

Plasma Arc Machining: Application of plasma for machining, metal removal mechanism, process parameters, accuracy and surface finish and other applications of plasma in manufacturing industries.

TEXT BOOKS :

1. Advanced machining processes/ VK Jain/ Alliedpublishers.
2. Modern Machining Process / Pandey P.C. and Shah H.S./TMH.

REFERENCE BOOKS :

1. M.K.Singh, Unconventional Manufacturing Processes / New ageinternational.
2. Modern Machining Process / Pandey P.C. and Shah H.S./TMH.
3. NewTechnology/BhattacharyaA/TheInstitutionofEngineers,India1984.
4. ModernProduction/OperationsManagement/Baffa&RakeshSarin.

COURSE OUTCOMES :

After completion of this course, the graduates can express different Unconventional machining processes and will be,

1. Abilitytoselectsuitablemachiningprocessforsuitablematerials.
2. Abilitytoselectoptimumparametersfortherespectivemachiningprocess.
3. Ability to influence of difference process parameters on the performance and theirapplications.
4. Ability to solve most relevant industrial solutions pertaining to machining of hardmaterials.
5. Ability to design soft tools for machining hardmaterials.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J8346) AUTOMOBILE ENGINEERING

B.TECH. IV YEAR–IISEM **L T P C**
3 0 0 3

Prerequisites: InternalCombustionEngines,ThermalEngineering-1

COURSE OBJECTIVES :

1. To asses components of an automobile and functions of eachcomponent.
2. To learn working of fuel injection pumps and advanced injection systems used.
3. To explain detailed study of sensors and modern Ignitionsystems.
4. To explain the working of transmission systemcomponents.
5. To acquire knowledge about suspension and braking systems in automobilesandConceptofsteeringgeometryrelatedtoVehicledynamics applications.

UNIT – I

Introduction: Components of four wheeler automobile – chassis and body – power unit –power transmission – rear wheel drive, front wheel drive, 4 wheel drive.

Typesofautomobileenginesandenginecomponents:engineconstruction, turbo charging and super charging – engine lubrication, splash and pressure lubrication systems, oil filters, oil pumps – crank case ventilation – engine service, reboring, decarburization, Nitriding of crankshaft.

UNIT – II

Fuel System, S.I. Engine and C.I. Engine: Fuel supply systems, Mechanical andelectricalfuelpump–filters–carburetor–types–airfilters–petrolinjection. Multipoint fuel injection for S.I. Engines - Requirements of diesel injection systems, types of injection systems, fuel pump - nozzle, spray formation, injectiontiming,testingoffuelpumps.Commonraildieselinjectionsystems.

Cooling system and Emission from Automobiles : Cooling Requirements, Air Cooling, Liquid Cooling, Thermo, water and Forced Circulation System – Radiators–Types–CoolingFan-waterpump,thermostat,evaporatingcooling – pressure sealed cooling – antifreeze solutions.– Pollution standards National and international – Pollution Control Techniques –Energyalternatives.

UNIT – III

Ignition System: Function of an ignition system, battery ignition system, constructional features of storage, battery, auto transformer, contact breaker points, condenser and spark plug – Magneto coil ignition system, electronic ignition system using contact breaker, electronic ignition using contact triggers – spark advance and retardmechanism.

Electrical System: Charging circuit, generator, current – voltage regulator – starting system, bendix drive mechanism solenoid switch, lighting systems, Horn, wiper, fuel gauge– oil pressure gauge, engine temperature indicator etc.

UNIT –IV

Transmission System: Clutches, principle, types, cone clutch, single plate clutch, multi plate clutch, magnetic and centrifugal clutches, fluid fly wheel – gear boxes, types, sliding mesh, construct mesh, synchro mesh gear boxes, epicyclic gear box , over drive torque converter. Propeller shaft – Hotch – Kiss drive, Torque tube drive, universal joint, differential rear axles – types –wheels andtyres.

UNIT – V

SteeringSystem: Steeringgeometry–camber,castor,kingpinrake,combined angle toein, center point steering. Types of steering mechanism – Ackerman steering mechanism, Davis steering mechanism, steering gears – types, steeringlinkages.

Suspension System and Braking System: Objects of suspension systems – rigid axle suspension system, torsion bar, shock absorber, Independent suspensionsystem.Mechanicalbrakesystem,Hydraulicbrakesystem,Master cylinder, wheel cylinder tandem master cylinder Requirement of brake fluid, Pneumatic and vacuumbrakes.

TEXT BOOKS:

1. Automotive Mechanics – Vol. 1 &Vol. 2 / KirpalSingh.
2. Automobile Engineering / WilliamCrouse.

REFERENCE BOOKS:

1. Automotive Engineering / Newton Steeds &Garrett.
2. Automotive Mechanics / G.B.S.Narang.
3. Automotive Mechanics /Heitner.
4. Automotive Engines /Srinivasan.
5. Automobile Engineering – K.K. Ramalingam / Scitech Publications (India) PVT.LTD.

COURSE OUTCOMES :

1. Ability to develop different components of anautomobile.
2. Ability to develop the fuel feed systems in SI and CI engines, Sensors and Ignitionsystems.
3. Ability to design various transmissionsystems.
4. Abilitytoanalyzethesimpledesignorientedproblemsrelatedtosuspension systems.
5. Ability to analyze the steering systems and brakingsystems.and increase emoloyability

JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J8347) MECHANICAL VIBRATIONS

B.TECH. IV YEAR–IISEM **L T PC 3 0 03**

COURSE OBJECTIVES: To enable the graduate to learn

1. The process of reducing the physical systems (any number of degrees of freedom) to mathematicalmodels.
2. The process of formulating the equations with regards to mathematical models.
3. The process of finding the solutions and subsequently analyzing the physical systems forstability.
4. To develop the concept of infinite number of degrees of freedom through practicalexamples.
5. The process of preparing corresponding electrical circuits for physical systems and apply the concepts of electrical and mechanical analogy to ascertain theirstability.

UNIT – I

UN DAMPED FREE VIBRATIONS OF SINGLE DEGREE OF FREEDOM SYSTEMS: Introduction-Differentialequation–Solutionofdifferentialequation - Torsional vibrations – Equivalent stiffness of spring combinations -Springs in series–Springsinparallel–Naturalfrequencyofavibrationsystembyenergy method.

UNIT - II

DAMPED FREE VIBRATIONS OF SINGLE DEGREE OF FREEDOM SYSTEMS:

Introduction – Different types of dampings – Free vibrations with viscous damping – Over damped, critically damped and under damped systems - Logarithmic decrement – Viscous dampers.

UNIT - III

FORCED VIBRATIONS OF SINGLE DEGREE OF FREEDOM SYSTEMS:

Introduction – Forced vibrations with constant harmonic excitation – Steady state vibrations – Forced vibration with rotating and reciprocating unbalance - Forced vibrations due to excitation of the support –Vibration isolation and transmissibility - Typical isolators and mount types – vibration measuring instruments.

UNIT - IV

TWO DEGREES OF FREEDOM SYSTEMS: Introduction – Principal modesof vibrations – Other cases of simple two degrees of freedom systems – Two massesfixedonatightlystretchedstring-Doublependulum–Torsionalsystem – Undamped forced vibrations with harmonic excitation -Undamped dynamic vibrationabsorber**.**

UNIT - V

MULTI DEGREE OF FREEDOM SYSTEMS: Exact analysis- Undamped free vibrations of a multi degree of freedom system – Influence coefficients – Flexibility coefficients and Maxwell reciprocal theorem – Torsional vibrations of multi rotor systems – Vibrations of geared systems - Numerical method – DeterminationofnaturalfrequencyofvibrationbyRayleigh'smethod.

TEXT BOOKS :

1. G.K.Grover, Mechanical vibrations,7th edition, Nemchand&Bros.2003.
2. W.T.Thomson, Theory of vibrations, 3rd edition, CBS Publications & Distributors,1999.

REFERENCE BOOKS :

1. WilliamW.Setio,Mechanicalvibrations,Schaumoutlineseries,1964.
2. V.P.Singh, Mechanical vibrations, 3rd edition, DhanpatRai& Sons, 2001.
3. S.S.Rao, Mechanical Vibrations, Pearson Education,2004.

COURSE OUTCOMES :

1. Abilitytolearnhowtodevelopmathematicalmodelsformechanicalsystems using mass, spring anddampers.
2. Ability to gain experience in deriving governingequations.
3. Ability to model a vibrating mechanical system, develop and solve its governing equations in order to obtain the response of the system under various types of excitationconditions.
4. Ability to learn how to interpret the response of a mechanical system and use the response information in its design and testing in both time and frequencydomains.
5. Ability to asses the sources of vibration and noise in machines and make design modifications to reduce the vibration and noise and improve the life of the components for smoothoperation.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J8348) COMPUTATIONAL FLUID DYNAMICS

B.TECH. IV YEAR–IISEM **L T P C 3 0 03**

Prerequisites: Fluid Mechanics and Heat Transfer.

COURSE OBJECTIVES :

1. To describe the elements of computational methods of fluidflow.
2. To infers about the application of CFD to different fields ofengineering.
3. To distinguish the flow fields and the behavior of fluid, combustionetc.,
4. To explain the solutions to the complicated problems by using the techniques ofCFD.
5. To identifies the Finite difference equations in HeatTransfer.

UNIT - I

INTRODUCTION: Computational Fluid Dynamics as a Research and Design Tool, Applications of Computational Fluid Dynamics.

GOVERNING EQUATIONS OF FLUID DYNAMICS: Introduction, Control Volume, Substantial Derivative, Divergence of Velocity, Continuity Equation, Momentum Equation and Energy Equation.

UNIT - II

MATHEMATICAL BEHAVIOR OF PARTIAL DIFFERENTIAL EQUATIONS: Introduction,ClassificationofQuasi-LinearPartialDifferentialEquations,Eigen ValueMethod,HyperbolicEquations,ParabolicEquations,EllipticEquations.

UNIT - III

BASICS ASPECTS OF DISCRETIZATION: Introduction, Introduction of Finite Differences,DifferenceEquations,ExplicitandImplicitApproaches,Errorsand Stability Analysis, GridGeneration.

UNIT - IV

INCOMPRESSIBLE FLUID FLOW: Introduction, Implicit Crank-Nicholson Technique,PressureCorrectionMethod,ComputationofBoundaryLayerFlow.

UNIT - V

HEAT TRANSFER: Finite Difference Applications in Heat conduction and Convention – Heat conduction, steady heat conduction, in a rectangular geometry,transientheatconduction,Finitedifferenceapplicationinconvective heattransfer.

TEXT BOOKS:

1. John. D. Anderson, Computational fluid dynamics - Basics with applications - McGraw Hill.

REFERENCE BOOKS :

1. Anderson, D.A.,Tannenhill, I.I., and Pletcher, R.H.,Taylor and Francis Computational Fluid Mechanics and HeatTransfer.
2. Suhas V. Patankar, Numerical heat transfer and fluid flow - Butter-worth Publishers.
3. T.KSengupta,FundamentalsofComputationalFluidDynamics,University Press.

COURSE OUTCOMES:

1. AbilitytoacquiretheCFDtechniquesforthefluidflowfieldsofcombustion chamberofICenginesandconsequentlyanalyzethebehavioroffluid.
2. Ability to analyze the effects of important parameters on the performance and efficiency of thesystem.
3. Abilitytocarryoutthesimulationstudiesforvariousthermalsystems.
4. Ability to compares the importance of the simulation studies where there is no scope for carrying out the experimentalwork.
5. Abilitytoimprovetheperformanceandefficiencyofthermalsystemsbased on the simulationresults.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
(UGC-AUTONOMOUS)

(J8349) THEORY OF ELASTICITY

B.TECH. IV YEAR–IISEM **L T P C 3 0 03**

COURSE OBJECTIVES :

1. To describe the principles of elasticity theory and to find of stress in elastic stressanalysis.
2. To explain the displacement of simplebeams.
3. Toacquiretheknowledgeanalysisoflinearelasticsolidsundermechanical loads.
4. To learn the Airy stress functions for 2-D plane stress and plane strain problems in Cartesian and cylindrical coordinatesystems.
5. To understand the stress functions for rectangular and circular cross-sectional cantileverbeams.

UNIT – I

ELASTICITY: Two dimensional stress analysis - Plane stress - Plane strain - Equations of Compatibility - Stress function - Boundary conditions.

PROBLEM IN RECTANGULAR COORDINATES - Solution by polynomials - Saint Venant's principles -Determination of displacement - Simple beam problems.

UNIT – II

PROBLEMS IN POLAR COORDINATES - General equations in polar coordinates - Stress distribution symmetrical about axis - Strain components in polar coordinates - Simple and symmetricproblems.

UNIT – III

ANALYSIS OF STRESS AND STRAIN IN THREE DIMENSIONS - Principle stresses – Homogeneous deformations – Strain at a point – Principal axes of strain - Rotation.

UNIT – IV

GENERAL THEOREMS: Differential equations of equilibrium and conditions of compatibility – Determination of displacement - Uniqueness of solution - Reciprocaltheorem.

UNIT – V

BENDING OF PRISMATIC BARS - Stress function - Bending of cantilever beam - Beam of rectangular cross-section - Beams of circular cross-section.

TEXT BOOKS:

1. Timoshenko,Goodier.,TheoryofElasticity6thEdition2009-McGrawHill.
2. A.I.Lurie,TheoryofElasticity.,4thEdition2005-SpringerVerlagNewYork, LLC.

REFERENCE BOOKS :

1. Dr.Sadhu Singh., Applied stress analysis, KhannaPublishers.
2. Dally and Riley., Experimental stress analysis, McGraw-Hill.
3. LOVE .A.H., A treatise on Mathematical theory of Elasticity, Dover publicationsInc.
4. A.Meceri., Theory of Elasticity,Springer.

COURSE OUTCOMES :

1. To analyze the equations of compatibility by using plane stress and plane strainconditions.
2. To applySaintVenant'sprinciplestodeterminethedisplacementsofsimple beams.
3. To analyze the stresses and strains in 3-Dimensionalproblems.
4. To solve the linear elasticity problems using various analyticaltechniques.
5. To analyze the vectors and tensors to enhance the theory of elasticity where evernecessary.

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JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES

(UGC-AUTONOMOUS)

(J8350) PLANT LAYOUT &MATERIALHANDLING

B.TECH. IV YEAR–IISEM L T P C 3 0 03

COURSE OBJECTIVES :

1. To plan, analyze and design to improve manufacturing and services facilities.
2. To summarize the benefit of an efficient material handlingsystem.
3. To demonstrate the effect process layout has on the material handling system.
4. To apply the techniques to evaluate and design material handling and storage systems.
5. To explore integrate concepts and techniques learned through this course inordertodesignandefficientplantlayoutinateamenvironment.

UNIT-I:

Introduction – Classification of Layout, Advantages and Limitations of different layouts,Layoutdesignprocedures,Overviewoftheplantlayout,Processlayout &Product layout selection, specification, implementation and follow up, comparison of product and process layout.

UNIT-II:

Heuristics for plant layout –ALDEP, CORELAP,CRAFT.

UNIT-III:

Group layout-Fixed position layout-Quadratic assignment model, Branch and bound method.

UNIT-IV:

Introduction, material handling systems, material holding properties, classification of material handling equipment, relationship of material handling to plant lay out ,Basic material handling systems: selection material handling method –path, equipment and function oriented systems.

UNIT-V:

MethodstominimizecostofMaterialHandlingmaintenanceofmaterialhandling equipments, safety in handling, Ergonomics of material handling equipment, design, miscellaneousequipments.

TEXT BOOKS :

1. Operations Management/PBMahapatra/PHI.
2. Aspects of Material handling/Dr.KC Arora & Shinde, Laxmipubliocations.

REFERENCE BOOKS :

1. FacilityLayout&Locationananalyticalapproach/RLFrancis/LFMeLinnis Jr, White/PHI.
2. Production and Operations Management/ R Panneerselvam/PHI.
3. Introduction to Material handling/ Ray. Siddhartha/ NewAge.

COURSE OUTCOMES :

1. Ability to analyze the importance of proper material handling and storage techniques.
2. Ability to learn proper material handling engineering techniques regarding hoisting and conveyingequipment.
3. Ability to infers about toxic hazards of materials being handled, such as chemicals, dusts andpoisons.
4. Ability to refer the formal training requirements for material handling personnel, especially equipmentoperators.
5. Ability to summarize the product line Integrate concepts and techniques learned through this course in order to design and efficient plant layout in a teamenvironment.

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