**ACADEMIC RULES AND REGULATON**

**&**
**SCHEME AND SYLLABUS OF**

# 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)

*(Effectiveforthestudentsadmittedinto I-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.TechcourseunlessextensionisgrantedbyCollege 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.CreditsshallbeassignedtoeachsubjectcourseinaL: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*<br>*(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*<br>*(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*<br><br>*Fourthyearfirstsemesterto fourth year secondsemester* | *(i) Regular course of study of third year secondsemester*<br>*(ii) Musthavesecuredatleast72creditsoutof 120creditsi.e.60%creditsuptothirdyearsec--ondsemesterfromallrelevantregularand supplemenatary examinations, whether the student takesthoseexaminationsornot*<br>*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) ≥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.≥5 (C Grade and above).*

*TheSemesterGradePointAverage(SGPA)iscalculatedbydividingthe SumofCreditPoints Σ(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 that$i^{th}$ 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≥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* $\mathbf{G}_j$ *represents the GradePoints(GP)correspondingtotheLetterGradeawardedforthat*$j^{th}$ *subject. After registration and completion of I year I semester however, the SGPA of that Semester itself may be taken as the CGPA, as there are no 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* $\geq 5$ *(at the end of that particular Semester); and a student shall be declared successful or 'passed' in the B.Tech. Programme, only when he gets a CGPA* $\geq 5$*, subject to the condition that he secures a GP5 (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 toobaintherequirednumberofcreditswithinstipulatedperiod.*
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*<br>*(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*<br>*(ii) Must have secured atleast 48 credits outof80creditsi.e.,60%creditsupto thirdyearsecondsemesterfromallrelevant regular and supplementary examinations, 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.*** **Allotherregulationsasapplicable forB.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.<br>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 thescriptoranyparttherеofinside 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 acandidatefortheparticularexaminationoranypersonnotconnected 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 marks will be consolidated from third semester to the end of the student course 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 and verified by NSS authorities of the college before awarding the points to the student. Each activity points earned will be evaluated as one mark during final consolidaton of marks.*

**THE MAIN ACTIVITY SEGMENTS ARE LISTED BELOW**

1. *National Initiatives*
2. *Sports and Games*
3. *Cultural Activities*
4. *Leadership and management*

*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.*

*Additional Activities will be updated on regular basis as per the NSS handbook issued by the state government NSS unit.*

| 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** |

# 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 | 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 |

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

## 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<br>J5522<br>J5523 | **Professional Elective - I**<br>1. ArtificialIntelligence<br>2. Adhoc & Sensor Networks<br>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<br>J6530<br>J6531 | **Professional Elective - II**<br>1. MachineLearning<br>2. ObjectOrientedanalysis&design<br>3. AdvancedDatabases | 30 | 70 | 2 | 1 | 0 | 3 |
| 4 | J6533<br>J6534<br>J6535 | **Professional Elective - III**<br>1. DistributedComputing<br>2. High PerformanceComputing<br>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
**(UGC-AUTONOMOUS)**

## 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 | | **Professional Elective - IV** | | | | | | |
| | J7542 | 1. NetworkProgramming | | | | | | |
| | J7543 | 2. Secure SoftwareEngineering | 30 | 70 | 2 | 1 | 0 | 3 |
| | J7544 | 3. PatternRecognition | | | | | | |
| | | **Professional Elective - V** | | | | | | |
| 4 | J7545 | 1. MobileComputing | | | | | | |
| | J7547 | 2. CloudComputing | 30 | 70 | 2 | 1 | 0 | 3 |
| | J7548 | 3. Software Testing Methodologies | | | | | | |
| | 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 | | **Professional Elective - VI** | | | | | | |
| | J8559 | 1. SemanticWeb&SocialNetworks | | | | | | |
| | J8560 | 2. E-Commerce | 30 | 70 | 2 | 1 | 0 | 3 |
| | J8561 | 3. Software ProjectManagement | | | | | | |
| | J8562 | 4. Optimization Techniques | | | | | | |
| 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.*
- *ErwinkreyszigAdvancedEngineeringMathematics,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
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## 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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## 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 of $N_2$,$O_2$and$F_2$molecules.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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## (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 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.*

**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
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## (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
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## (J1502) PROGRAMMING FOR PROBLEMSOLVING LABORATORY

**Common To**

| | L | T | P | C |
|---|---|---|---|---|
| **B.Tech. I Year I Sem: CSE,ECE,EEE** | | | | |
| **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.*

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## 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 31.5**

**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... ThestudentisalsoexposedtovarioustoolslikeScrewGauge,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.*
- *DeterminationofrigiditymodulusofagivenwireusingTorsionalpendulum.*
- *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*

- *Synthesis of Aspirin andParacetamol.*

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

**B.Tech. I YearIISemester** **L T P C3**
**1 0 4**

**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, 36th Edition,2010.*
- *Erwinkreyszig,AdvancedEngineeringMathematics,9th Edition,JohnWiley &Sons,2006G.B.ThomasandR.L.Finney,CalculusandAnalyticgeometry, 9th Edition,Pearson, Reprint,2002.*

**References :**

- *Paras Ram, Engineering Mathematics, 2nd Edition, CBSPublishes.*
- *S. L. Ross, Differential Equations, 3rd Ed., Wiley India,1984.*

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## (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***:ConstructionalfeaturesMethodsofExcitation,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 :**

*InviewofthegrowingimportanceofEnglishasatoolforglobalcommunication and the consequent emphasis on training students to acquire language skills, thesyllabusofEnglishhasbeendesignedtodeveloplinguistic,communicative and critical thinking competencies of Engineeringstudents.*

*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 theexercisesgivenaftereachexcerpt,andalsoforsupplementingtheexercises 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.*

**Learning Objectives:** *The course will help to*

a. *Improve the language proficiency of students in English with an emphasis on Vocabulary, Grammar, Reading and Writingskills.*
b. *Equip students to study academic subjects more effectively and critically usingthetheoreticalandpracticalcomponentsofEnglishsyllabus.*
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 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.* –**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
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## (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-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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**(J2504) OBJECT**

**ORIENTEDPROGRAMMINGLAB** **B.Tech. I Year II-SEM:**

**CSE,ECE,EEE** **L T P C0**

**0 31.5**

**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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## (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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## (J1012) (J2012) ENGLISH LANUAGECOMMUNICATION SKILLS LAB

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

**Speaking Skills :**

**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.*

**Reading Skills :**

**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.*

**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: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
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## (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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## (J3005) PROBABILITY AND STATISTICS

**B.Tech II-YearI-Semester-CSE** **L T P C**
**3 1 04**

**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
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## (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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## (J3419) COMPUTER ORGANIZATION

**B.Tech. III Year I-Sem:ECE** **LT 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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## 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,Pearson14th Edition, 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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## (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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## (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
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## (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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## (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
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## (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, TATAMcGraw-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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## (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 d e a d l o c k .*
**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" 2nd Edition,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
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## (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
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## (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" 2nd Edition, 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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## 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
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## (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
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## (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
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## (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
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## (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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## (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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## (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
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## (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
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## (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**
*InthisweekyouaregoingtoworkonTriggers.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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## (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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## (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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## (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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## (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
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## (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
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## (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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## (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
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## (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
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## (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
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## (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.*

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## (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
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## (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. *Applyseveralcommonprograminginterfacestonetworkcommunication.*
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
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## (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 Yearl-SEMCSE** **L T P C2**
**1 0 3**

**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.*

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**(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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**(UGC-AUTONOMOUS)**

## (J7549) DATA MINING LAB

**B.Tech. IV YearI-SEMCSE** **L T P C0**
**0 42**

**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.*

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**(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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**(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,Logiconthesemantic 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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## (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 Enneeñng 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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