# ACADEMIC REGULATIONS, COURSE STRUCTURE AND DETAILED SYLLABUS

# COMPUTER SCIENCE & ENGINEERING

*For*

**B.TECH. FOUR YEAR DEGREE COURSE**

***(Applicable for the batches admitted from 2018-2019)***


**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES**

**(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)

*(Effective for the students admitted into I-Year from the Academic year 2018-2019)*

**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 academic years.

ii) Register for **160** credits and should secure **160** credits. A student will be eligible to get B.Tech. Degree with Honors, if he/she completes an additional 20 credits through **Massive Online Open Courses (MOOCs).** Each subject offered by UGC/AICTE/NPTEL/NEC or equivalent carries 2 credits.

iii) 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 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, shall forfeit their seat in B.Tech course unless extension is granted by College Academic Council (CAC) to complete the course for a further period.

**2. Courses of Study**

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

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

**3. Credits :**

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

| | |
|---|---|
| 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. **Course Registration:**

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

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

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

5.4 A student 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). For such extra subject(s) registered a letter grade alone will be indicated in te Grade card as a performance measure.

**6. Subjects / Courses to be offered:**

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

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

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

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

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

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

**7. Programme Pattern:**

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

ii. A student is eligible to appear for the end examination in a subject, but absent at it or has failed in the end examination may appear for that subject at the supplementary examination.

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

**8. Distribution and Weightage of Marks:**

8.1 The Performance of a student in each semester shall be evaluated subject-wise with a maximum of 100 marks for theory and 100 marks for practical subjects. In addition, Industry oriented mini-project, Seminar, Comprehensive Viva-Voce and Major Project Work shall be evaluated for 100 marks.

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

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

8.4 Each mid-term examination of 90 minutes consists of Part-A (objective type- 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 questions of each 4 marks. First mid-term examination shall be conducted for first 2.5 units (50%) of syllabus and second mid-term examination shall be conducted for remaining 2.5 units (50%) of syllabus. Objective type may be with multiple choice questions, true/false, match type questions, fill in the blanks etc.

For the subject Gender Sensitization 30 marks are allotted for assignments and 70 marks are allotted for mid examination. Mid examination consists of questions and student has to answer 5 questions of 14 marks of each.

8.5 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 assignments shall be as specified by the concerned subject teacher.

8.6 The first mid-term examination marks and first assignment marks make first set of internal evaluation and second mid-term examination marks and second assignment marks make second set of internal evaluation marks. 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 whichever is lower are to be considered for awarding internal marks.

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

(i) The end semesters exam will be conducted for 70 Marks which consist of two parts viz. Part-A for 20 Marks and Part-B for 50 Marks.

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

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

8.8 For practical subjects there shall be a continuous internal evaluation during the semester for 30 sessional marks and 70 end examination marks. Out of the 30 sessional marks, day-to-day work in the laboratory shall be evaluated for 20 marks and internal examination for practical shall be evaluated for 10 marks conducted by the concerned laboratory teacher. The end examination shall be conducted with one external examiner and one internal examiner. The external examiner shall be appointed from the panel of examiners as recommended by the Board of Studies in respective Branches.

8.9 For the subject having design and/or drawing, (such as Engineering Graphics, Engineering Drawing, Machine Drawing) and estimation, the distribution shall be 30 marks for internal evaluation (20 marks for day-to-day work and 10 marks for internal test) and 70 marks for end examination.

8.10 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 100 marks. The committee consists of Head of the Department, Supervisor of mini project and a senior faculty member of the department.

8.11 There shall be a seminar presentation by the student. For the seminar, the student shall collect the information on a specialized topic and prepare a technical report, showing his understanding over the topic, and submit to the department, which shall be evaluated by the departmental committee consisting of Head of the Department, seminar supervisor and a senior faculty member. The seminar report and presentation shall be evaluated for 100 marks.

8.12 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 100 marks.

8.13 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 Comprehensive Viva-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 the Committee.

8.14 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 of the

Department and the Project Supervisor. The internal evaluation shall be on the basis of two seminars given by each student on the topic of his major project.

8.15 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 marks each.

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

**9. Attendance Requirements:**

9.1 A student shall be eligible to appear for the end examinations if he acquires a minimum of 75% of aggregate attendance in all the subjects.

9.2 Condonation of shortage of attendance in each subject up to 10% on genuine grounds in each semester may be granted by the College Academic Council on recommendation by the Principal.

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

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

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

**10. Minimum Academic Requirements:**

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

10.1 A student shall be deemed to have fulfilled the minimum academic requirements and earned the credits allotted to each theory or practical or design or drawing subject or project if he/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.

**10.2 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 |
| | First year second semeter to second year first semester | (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 takes those examinations or not |
| 2. ` | Second year first semester to second year second semester | Regular course of study of second year first semester |
| | Second year second semester to third year first semester | (i) Regular course of study of second year second semester<br>(ii) Must have secured atleast 48 credits out of 80 credits i.e. 60% credits upto second year second semester from all relevant regular and supplemenatary examinations, whether the student takes those examina tions or not |
| 3. | Third year first semester to third year second semester | Regular course of study of third year first semester. |
| | Third year second semester to fourth year first semester | (i) Regular course of study of third year second semester<br>(ii) Must have secured atleast 72 credits out of 120 credits i.e. 60% credits upto third year sec--ond semester from all relevant regular and supplemenatary examinations, whether the stu dent takes those examinations or not |
| | Fourth year first semester to fourth year second semester | Regular course of study of fourth year first semester. |

10.5 A student shall register for all subjects covering 160 credits as specified and listed (with the relevant course/subjects classifications as mentioned) in the course structure, put up all the attendance and academic requirements and securing a minimum of C Grade (Pass Grade) or above in each subject, and earn 160 credits securing Semester Grade Point Average (SGPA) $\geq$ 5 in each semester, and Cumulative Grade Point

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

10.6 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 will be done for that entire semester in which he got detained.

10.7 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 gets readmitted.

10.8 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 carried over, and added to the marks to be obtained in the supplementary examination, for evaluating his performance in that subject.

**11. Grading Procedure**

11.1 Marks will be awarded to indicate the performance of each student in each Theory Subject, or Lab/Practicals or Seminar or Project or Mini-Project, Internship based on the % of marks obtained in End examination, both taken together as specified in item No. 07 above and a corresponding Letter Grade shall be given.

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

**Grades and Grade Points**

| **% of Marks Secured in a Subject / 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 |

11.3 A student obtaining 'F' Grade in any subject shall be considered 'failed' and will be required to reappear as 'Supplementary Candidate' in the End Semester Examination, as and when offered. In such cases, his Internal Marks in those Subject(s) will remain same as those he obtained earlier.

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

11.5 In general, a student shall not be permitted to repeat any Subject/ Course(s) only for the sake of 'Grade Improvement' or 'SGPA/CGPA Improvement'. However, he/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).

11.6 A student earns Grade Point (G.P.) in each Subject/Course, on the basis of the Letter Grade obtained by him in that Subject/Course (excluding Mandatory non-credit Courses). Then the corresponding 'Credit Points'(C.P.) are computed by multiplying the Grade Point with Credit Points (C.P.) for that particular Subject/Course.

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

11.7 The student passes the Subject / Course only when he/she gets G.P.≥5 (C Grade and above).

11.8 The Semester Grade Point Average (SGPA) is calculated by dividing the Sum of Credit Points∑(C.P.) Secured from All Subjects/Courses registered in a semester, by the total number of credits registered during that semester. SGPA is rounded off to Two Decimal Places. SGPA is thus computed as

$\left\{\sum_{i=1}^{N} C_i G_i\right\} / \left\{\sum_{i=1}^{N} C_i\right\}$... For each semester

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

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

$\left\{\sum_{j=1}^{M} C_j G_j\right\} / \left\{\sum_{j=1}^{M} C_j\right\}$ …for all 'S' semesters registered (i.e., upto and inclusive of 'S' semester, S >_2)

Where ' M ' is the total No. of Subjects (as specifically required and listed under the Course Structure of the parent Department) the student has 'REGISTERED' from the 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 Grade Points (GP) corresponding to the Letter Grade awarded for that $j^{th}$ subject. After registration and completion of I year I semester however, the SGPA of that Semester itself may be taken as the CGPA, as there are no cumulative effects.

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

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

**12. Passing Standards :**

12.1 A student shall be declared successful or 'passed' in a Semester only when he gets a SGPA ≥ 5 (at the end of that particular Semester); and a student shall be declared successful or 'passed' in the B.Tech. Programme, only when he gets a CGPA ≥ 5;subject to the condition that he secures a GP ≥ 5 (C Grade or above) in every registered Subject/ Course in each Semester (during the B.Tech Programme) for the Degree Award as required.

12.2. 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 the Principal.

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

ii.) To 'improve his SGPA of such a Semester (and hence CGPA to 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 calculation of SGPA and CGPA, only if there is an improvement.

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

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

**13. Declaration of Results :**

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

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

**% of Marks = (Final CGPA) X 10**

**14. Revaluation and Re-Counting :**

14.1 A student can apply for re-counting for the appeared theory subjects within the specified time period given by controller of examinations.

14.2 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 a semester.

**15. Award of Degree under CBCS :**

15.1 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 academic years.

ii) Register for 160 credits and secure 160 credits. A student will be eligible to get B.Tech. Degree with Honours, if he/she completes an additional 20 credits through Massive Online Open Courses (MOOCs).

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

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

**Award of Division**

| S.No. | Division | CGPA |
|---|---|---|
| 1. | First class with Distinction | $\geq$ 7.5 |
| 2. | First Class | $\geq$ 6.5 but less than 7.5 |
| 3. | Second Class | $\geq$ 5.5 but less than 6.5 |
| 4. | Pass Class | $\geq$ 5 but less than 5.5 |

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

**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 any case of indiscipline is pending against him/her, the result of the student may be withheld, and he/she will not be allowed to go into the next higher semester. The Award or issue of the Degree may also be with held in such cases.

**17. Transitory Regulations :**

Student who has discontinued for any reason, or has been detained for want of attendance or lack of required credits as specified, or who has failed after having undergone the degree programme, may be considered eligible for readmission to the same subject/course (or equivalent subjects/courses, as the case may be), and same Professional Electives/Open Electives (or from set/category of electives or equivalents suggested, as the case may be) as and when they are offered (within the time-frame of 8 years from the date of commencement of his I year I Semester).

**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 of study.
2. When students of JITS get transferred from on regulation to another regulation or from previous syllabus to revised syllabus.
3. When as student after long discontinuity rejoins the college to complete his Programme of study for the award of a degree.

**I. Transitory Regulations :** For students admitted under advance standing, these transitory regulations will provide the modus iperandi. At the time of such admission, basd on the Programme pursued (case by case).

1. Equivalent courses completed by the student are established by the Chairman, BOS concerned.
2. Marks/Credits are tranferred for all such equivalent courses and treated as successfully cleared in the Programme study prescribed by JITS.
3. A Programme chart of residual courses not cleared will be derived and a Programme of study with duration specified will be prescribed for pursuing at JITS.
4. Marks obtained in the previous systtem if the case be, are converted to grades and accordingly CGPA is calculated. All other modalities and regulations governing shall be the same as those applicable to the stream of students with whom such a candidate is merged.

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 to obtain the required number of credits within stipulated period.
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 of admission.
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 which he/she admitted. After taking admission the autonomous regulations are applicable for the subsequent promotion to the next academic year.

**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 failed after having undergone the degree programme, may be considered eligible for readmision to the same subject/course (or equivalent subjects/ courses, as the case may be).
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 8 years from the date of commencement of his I year I Semester).

**Scope :**

1. The academic regulations should be read as a whole, for the purpose of any interpretation.
2. In case of any doubt or ambiguity in the interpretation of the above rules, the decision of the Principal is final.
3. JITS may change or amend te academic regulations, course structure or syllabi at any time, and the changes or amendments made shall be applicable to all students with effect from the dater of notified.

**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 any interpretation.

iv. In case of any doubt or ambiguity in the interpretation of the above rules, the decision of the Chairman, College Academic Council is final.

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

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

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

1. The students admitted to B.Tech. Programme under Lateral Entry Sceme will pursue the course for not less than three academic years and not more than six academic years.
2. The students have to acquire all credits (Total 120) from II to IV year of B.Tech. Program (Regular) for the award of the degree. Register all credits and secure all credits.
3. A student will be eligible to get B.Tech. Degree with Honours, if he/she completes an additional 20 credits through Massive Online Open Courses (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 activity points.
5. Student, who fails to fulfill the requirements for the award of the degree in six consecutive academic years from the year of admission, shall forfeit his seat unless extension is granted by the College Academic Council to complete the Programme for a further period.
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 | Regular course of study of second year first semester |
| | Second year second semester to third year first semester | (i) Regular course of study of second year second semester<br>(ii) Must have secured atleast 20 credits 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 or not |
| 2. | Third year first semester to third year second semester | Regular course of study of third year first semester |
| | Third year second semester to fourth year first semester | (i) Regular course of study of third year second semester<br>(ii) Must have secured atleast 48 credits out of 80 credits i.e., 60% credits upto third year second semester from all relevant regular and supplementary examinations, whether the student takes those examinations or not |
| | Fourth year first semester to fourth year second semester | Regular course of study of fourth year first semester |

**8. All other regulations as applicable for B.Tech. IV year degree course (Regular) will hold good for B.Tech. (Lateral Entry Scheme)**

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

## MALPRACTICES RULES

### DISCIPLINARY ACTION FOR / IMPROPER CONDUCT IN EXAMINATIONS

| | Nature of Malpractices/Improper Conduct | Punishment |
|---|---|---|
| 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 appearing but has not made use of (material shall include any marks on the body of the candidate which can be used as an aid in the subject of the examination) | Expulsion from the examination hall and cancellation of the performance in that subject only. |
| (b) | Gives assistance or guidance or receives it from any other candidate orally or by any other body language methods or communicates through cell phones with any candidate or persons in or outside the exam hall in respect of any matter. | Expulsion from the examination hall and cancellation of the performance in that subject only of all the candidtes involved. In case of an outsider, he will be handed over to the police and a case is registered against him. |
| 2. | Has copied in the examination hall from any paper, book, programmale calculators, palm computers or any other form of material relevant to the subject of the examination (theory or practical) in which the candidate is appearing. | Expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate has already appeared including practical examinationsand project work and shall not be permitted to appear for the remaining examinations of the subjects of that Semester.<br>The Hall Ticket of the candidate is to be canelled. |

| | | |
|---|---|---|
| 3. | Impersonates any other candidate in connection with the examination. | The candidate who has impersonated shall be expelled from examination hall. The candidate is also debarred and forfeits the seat. The performance of the original candidate, who has been impersonated, shall be cancelled in all the subjects of the examination (including practicals and project rork) already appeared and shall not be allowed to appear for exminations of the remaining subjects of that semester/year. The candidate is also debarred for two consecutive semesters from class work and all University examinations. the continuation of the course by the candidate is subject to the academic regulations in connection with forfeiture of seat. If the imposter is an outsider, he will be handed over to the police and a case is registered against him. |
| 4. | Smuggles in the Answer book or additional sheet or takes out or arranges to send out the question paper during the examination or answer book or additional sheet, during or after the examination. | Expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate has already appeared including practical examinationsand project work and shall not be permitted to appear for the remaining examinations of the subjects of that Semester/year. The candidate is also debarred for two consecutive semesters from class work and all University examinations. The continuation of the course by the candidate is subject to the academic regulations in connection with forfeiture of seat. |

| | | |
|---|---|---|
| 5. | Uses objectionable, abusive or offensive language in the answer paper or in letters to the examiners or writes to the examiner requesting him to award pass marks. | Cancellation of the performance in that subject. |
| 6. | Refuses to obey the orders of the Chief Superintendent/Assistant-Superintendent/any officer on duty or misbehaves or creates disturbance of any kind in and around the examination hall or organizes a walkout or instigates others to walk out, or threatens the officer-in charge or any person on duty in or outside the examination hall of any injury to his person or to any of his relations whether by words, either spoken or written or by signs or by visible 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 misconduct or mischief whichresult in damage to or destrction of property in the examinagion hall or any part of the College campus or engages in any other act which in the opinion of the officer on duty amounts to use of unfair means or misconduct or has the tendency to disrupt the orderly conduct of the examination. | In case of students of the college, they shall be expelled from examination halls and cancellation of their performance in that subject and all other subjects the candidate(s) has (have) already appeared and shall not be permitted to appear for the remaining examinations of the subjects of that semester/year. The candidates also are debarred and forfeit their seats. In case of outsiders, they will be handed over to the police and a police case is registered against them. |
| 7. | Leaves the exam hall taking away answer script or intentially tears of the script or any part thereof inside or outside the examination hall. | Expulsion from the examination hall and cancellation of performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that Semester/year. The candidate is also debarred for two consecutive semesters from class work and all University examinations. The continuation of the course by the candidate is subject to the academic regulations in connection with forfeiture of seat. |

| | | |
|---|---|---|
| 8. | Possess any lethal weapon or fire-arm in the Examination hall. | Expulsion from the examination hall and cancellation of performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that Semester/year. The candidate is also debarred and forfeits the seat. |
| 9. | If student of the college, who is not a candidate for the particular examination or any person not connected with the college indulges in any malpractice or improper conduct mentioned in clause 6 to 8. | Student of the colleges expulsion from the examination hall and cancellation of performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that Semester/year. The candidate is also debarred and forfeits the seat.<br>Peson(s) who do not belong to the College will be handed over to police and, a police case will be registered against them. |
| 10. | Comes in a drunken condition to the examination hall. | Expulsion from the examination hall and cancellation of performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that Semester. |
| 11. | Copying detected on the basis of internal evidence, such as, during valuation or during special scrutiny. | Cancellation of performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work of that Semester/ year examination. |
| 12. | If any malpractice is detected which is not covered in the above clauses 1 to 11 shall be referred to Examination Result Processing Committee (ERPC) further action to award suitable punishment. | |

# 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 hand book 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 Counselling Camp | 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 / University Events

* Level IV - National Events

* Level V - International Events

** 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 complete an additional 20 credits acquired through MOOCS as directed by AICTE and UGC. The additional 20 credits can be earned by the student by successfully 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 certificates issued by the above government agency to review committee framed 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 UGC guidelines.

* * * * * * * *

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

## COURSE STRUCTURE

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

**I YEAR** **I SEMESTER**

| S.No. | Subject Code | Subject | Marks | | L | T | P | Credits |
|---|---|---|---|---|---|---|---|---|
| | | | Internal | External | | | | |
| 1 | J1001 | Mathematics-I | 30 | 70 | 3 | 1 | 0 | 4 |
| 2 | 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 | Programming for Problem Solving Lab | 30 | 70 | 0 | 0 | 3 | 1.5 |
| 7 | J1009 | Engineering Physics & Chemistry Lab | 30 | 70 | 0 | 0 | 3 | 1.5 |
| | | **Total Credits** | | | **13** | **04** | **10** | **22** |

**I YEAR** **II SEMESTER**

| S.No. | Subject Code | Subject | Marks | | L | T | P | Credits |
|---|---|---|---|---|---|---|---|---|
| | | | Internal | External | | | | |
| 1 | J2002 | Mathematics-II | 30 | 70 | 3 | 1 | 0 | 4 |
| 2 | 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 - I SEMESTER** **III SEMESTER**

| 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 - II SEMESTER** **IV SEMESTER**

| 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 | Formal Languages & Automata Theory | 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, I SEM** **V SEMESTER**

| 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. Artificial Intelligence<br>2. Adhoc & Sensor Networks<br>3. Graph Theory | 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, II SEM** **VI SEMESTER**

| 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. Machine Learning<br>2. Object Oriented analysis & design<br>3. Advanced Databases | 30 | 70 | 2 | 1 | 0 | 3 |
| 4 | J6533<br>J6534<br>J6535 | **Professional Elective - III**<br>1. Distributed Computing<br>2. High Performance Computing<br>3. Software Engineering | 30 | 70 | 3 | 0 | 0 | 3 |
| 5 | | **Open Elective - I** | 30 | 70 | 3 | 0 | 0 | 3 |
| 6 | J6536 | Complier Design / Computer Networks Lab | 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, I SEM** **VII SEMESTER**

| 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. Network Programming | | | | | | |
| | J7543 | 2. Secure Software Engineering | 30 | 70 | 2 | 1 | 0 | 3 |
| | J7544 | 3. Pattern Recognition | | | | | | |
| | | **Professional Elective - V** | | | | | | |
| 4 | J7545 | 1. Mobile Computing | | | | | | |
| | J7547 | 2. Cloud Computing | 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, II SEM** **VIII SEMESTER**

| 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. Semantic Web & Social Networks | | | | | | |
| | J8560 | 2. E-Commerce | 30 | 70 | 2 | 1 | 0 | 3 |
| | J8561 | 3. Software Project Management | | | | | | |
| | 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 to All Branches** **L T P C**
**3 1 0 4**

**Objectives:** To learn

- Types of matrices and their properties.
- Concept of a rank of the matrix and applying this concept to know the consistency and solving the system of linear equations.
- Concept of eigenvalues and eigenvectors and to reduce the quadratic form to canonical form.
- Concept of Sequence.
- Concept of nature of the series.
- Geometrical approach to the mean value theorems and their application to the mathematical problems.
- Evaluation of surface areas and volumes of revolutions of curves.
- Evaluation of improper integrals using Beta and Gamma functions.
- Partial differentiation, concept of total derivative.
- Finding maxima and minima of function of two and three variables.

**UNIT-I: Matrices**

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

**UNIT-II: Eigen values and Eigen vectors**

Linear Transformation and Orthogonal Transformation: Eigen values and Eigenvectors and their properties: Diagonalization of a matrix; Cayley-Hamilton Theorem (without proof); finding inverse and power of a matrix by Cayley-Hamilton Theorem; Quadratic forms and Nature of the Quadratic Forms; Reduction of Quadratic form to canonical forms by Orthogonal Transformation.

**UNIT-III: Sequences & Series**

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

Series: Convergent, Divergent and Oscillatory Series; Series of positive terms; Comparison test, p-test, D-Alembert's ratio test; Raabe's test; Cauchy's Integral.

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

**UNIT-IV: Calculus**

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

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

Definitions of Limit and continuity.

Partial Differentiation; Euler's Theorem; Total derivative; Jacobian; Functional dependence &independence, Maxima and minima of functions of two variables and three variables using method of Lagrange multipliers.

**Course outcomes :**

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

- Write the matrix representation of a set of linear equations and to analyse the solution of the system of equations.
- Find the Eigen values and Eigen vectors.
- Reduce the quadratic form to canonical form using orthogonal transformations.
- Analyse the nature of sequence and series.
- Solve the applications on the mean value theorems.
- Evaluate the improper integrals using Beta and Gamma functions.
- Find the extreme values of functions of two variables with/ without constraints.

**Text Books :**


- B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36$^{th}$Edition, 2010.
- Erwin kreyszig, Advanced Engineering Mathematics, 9$^{th}$Edition, John Wiley &Sons,2006.
- G.B. Thomas and R.L. Finney, Calculus and Analytic geometry, 9$^{th}$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,11$^{th}$Reprint, 2010.

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

## ENGINEERING PHYSICS

| | L | T | P | C |
|---|---|---|---|---|
| **B.Tech I Year I Sem: (CE,CSE &ME) (J1007)** | | | | |
| **B.Tech I Year II Sem: (EEE, ECE) (J2007)** | **3** | **1** | **0** | **4** |

**Objectives :**

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

**UNIT-I: Quantum Mechanics**

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

**Band theory of Solids:** Electron in periodic potential – Bloch theorem**,** Kronig–Penny Model, Brillion zone concept, Effective mass of an electron, Origin of energy band formation-Classification of materials.

**UNIT-II: Semiconductor Physics:**

Introduction to intrinsic and extrinsic semiconductors, Carrier concentration in conduction band and valancy band of intrinsic and extrinsic semiconductor, Fermi level, Effect of carrier concentration and temperature on Fermi level, Hall Effect- Applications of semiconductors.

**Semiconductor Optoelectronics**: Radative and Non-radative recombination mechanisms in semiconductors, Formation of PN junction diode-V-I characteristics, Zener diode - characteristics, Solar cell and LED- Construction and working mechanism.

**UNIT-III: Optics**

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

**LASERS**

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

**UNIT-IV: Dielectric Materials**

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

**Magnetic Materials**

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

**UNIT-V: Oscillations, waves**

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

**Mechanics**

Motion of a rigid body in the plane; Rotation in the plane; Kinematics in a coordinate system rotating and translating in the plane; Angular momentum about a point of a rigid body in planar motion; Euler's laws of motion, their independence from Newton's laws, and their necessity in describing rigid body motion.

**Outcomes :**

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

**Text Books :**

1. Introduction to Quantum Physics-Eisberg and Resnick.
2. J. Singh, Semiconductor Optoelectronics: Physics and Technology, McGraw-Hill Inc.
3. H.J. Pain, The Physics of vibrations and waves.
4. Quantum Mechanics- Decker.
5. Ian G. Main, Oscillations and waves in physics.

**REFERENCE :**

1. Engineering Physics, P.K Palanisamy, Scitech Publications.
2. Applied Physics- Dr. N Chandra Shaker and P. Appal Naidu.
3. Applied Physics for Engineers- P. Madhusudana rao, Academic Publishing Company.
4. Engineering Physics, V. Rajandran, Tata mc. Graw Hill Book Publishers.
5. Introduction to Mechanics — MK Verma.

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

## ENGINEERING CHEMISTRY

**B.Tech I year I sem.: CSE & ME (J1008)** **L T P C**

**B.Tech I year II sem.: EEE,ECE & CE(J2008)** **3 1 0 4**

**Course Objectives :**

- To achieve the knowledge about various kinds of Orbitals & Splitting patterns.
- To know about the water quality and its parameters, learning the knowledge in the assessment of water quality and purification.
- To achieve the knowledge about various kinds of Electrochemical cells and batteries and corrosion phenomenon.
- To understand the reactions, mechanism and stereochemistry of organic molecules.
- Understand the principle, instrumentation and applications of Spectroscopic techniques.

**Unit-1: Molecular structure and Theories of Bonding: (9)**

Atomic and Molecular orbitals. Linear Combination of Atomic Orbitals (LCAO), molecular orbitals of diatomic molecules, molecular orbital energy level diagrams of $N_2$,$O_2$ and $F_2$ molecules. ð molecular orbitals of butadiene and benzene.

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

**Unit-2: Water and its treatment: (9)**

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

**Unit-3: Electrochemistry and corrosion: (9)**

Electro chemical cells – electrode potential, standard electrode potential, types of electrodes – calomel, Quinhydrone and glass electrode. Nernst equation Determination of pH of a solution by using quinhydrone and glass electrode. Electrochemical series and its applications. Numerical problems. Potentiometric

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

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

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

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

Substitution reactions: Nucleophilic substitution reactions: Mechanism of $S_N1$, $S_N2$ reactions. Electrophilic and nucleophilic addition reactions: Addition of HBr to propene. Markownikoff and anti Markownikoff's additions. Grignard additions on carbonyl compounds. Elimination reactions: Dehydro halogenation of alkylhalides. Saytzeff rule. Oxidation reactions: Oxidation of alcohols using $KMnO_4$ and chromic acid.

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

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

Principles of spectroscopy, selection rules and applications of electronic spectroscopy. vibrational and rotational spectroscopy. Basic concepts of Nuclear magnetic resonance Spectroscopy, chemical shift. Introduction to Magnetic resonance imaging.

**Course Outcomes :**

- Students will gain the basic knowledge of atomic and molecular orbitals & Splitting patterns.
- They can understand the basic properties of water and its usage in domestic and industrial purposes.
- To gain the knowledge about the Electrochemical cells, batteries and corrosion phenomenon.
- They learn about organic reactions and the stereochemistry of organic molecules.
- They can predict potential applications of spectroscopy and practical utility in order to become good engineers and entrepreneurs.

**Text books :**


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


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

## (J1302) ENGINEERING GRAPHICS

**B.TECH. I YEAR – I SEM: CSE & EEE** **L T P C**
**1 0 4 3**

**Pre-requisites: Nil**

**Course objectives:**

1. To Use various engineering drawing instruments along with learn the basics of drawings, dimensioning, scales and conic sections like ellipse, parabola and hyperbola.
2. To Learn projections of points, lines and plane viewed in different positions.
3. To Learn projections of solids and sections of solids in different positions.
4. To impart knowledge of development of surfaces and intersections is most useful of real time applications in industry.
5. Attain the concept of isometric, orthographic projections.

**UNIT – I**

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

**UNIT- II**

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

**UNIT – III**

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

**UNIT – IV**

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

**UNIT – V**

**Isometric Projections:** Principles of Isometric Projection – Isometric Scale – Isometric Views –Conventions – Isometric Views of Lines, Plane Figures, Simple and Compound Solids – Isometric Projection of objects having non- isometric lines. Isometric Projection of Spherical Parts. Conversion of Isometric Views to Orthographic Views and Vice-versa –Conventions.

**Introduction to CAD: (For Internal Evaluation Weightage only):** Introduction to CAD Software Package Commands.- Free Hand Sketches of 2D- Creation of 2D Sketches by CAD Package.

**TEXTBOOKS :**

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

**REFERENCE BOOKS :**

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

**Course Outcomes :**

1. Select, construct and interpret appropriate drawing scales as per the situation and able to draw simple curves.
2. Graduates are able to draw orthographic projections of points ,lines and planes.
3. Able to draw the orthographic projections of solids and sections of solids.
4. Layout development of solids for practical situations along with able to draw sections of solids.
5. Comprehend the isometric projections.

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

## (J1501) PROGRAMMING FOR PROBLEM SOLVING

**Common To**

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

**Course Objectives :**

1 To introduces the basics of computers and information technology.
2. To educate problem solving techniques.
3. To impart programming skills in C language.
4. To practice structured programming to solve real life problems.
5. To study the concepts of Assembler, Macro Processor, Loader and Linker.

**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 Number System.

**UNIT-II**

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

**UNIT-III**

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

**UNIT-IV**

Structures – Arrays and Structures – Nested structures – Structure as Argument to functions– Union Pointers – Declaration, Initialization and Accessing Pointer variable – Pointers and arrays – pointers as argument and return value – Pointers and strings - pointers and structures.

**UNIT-V**

Introduction to File Concepts in C – File types – I/O operations on files – File modes – Random access to files – Command line arguments. Dynamic Memory Allocation: MALLOC, CALLOC, FREE, REALLOC Introduction to preprocessor – Macro substitution directives – File inclusion directives –Compiler Control directives – Miscellaneous directives.

**Text Books :**

1. J. B. Dixit, "Computer Fundamentals and Programming in C", Firewall Media, 2009.
2. Balagurusamy. E, "Programming in ANSI C", Tata McGraw Hill, Sixth edition, 2012.

**Reference Books :**

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

**Course Outcomes :**

1. Know the fundamentals of computers.
2. Uunderstand applying logical skills for problem solving.
3. Learn C programming language concepts.
4. Apply C programming language concepts for problem solving.
5. Gain knowledge in using memory management techniques in c programming.

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

## (J1502) PROGRAMMING FOR PROBLEM SOLVING 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 OS commands.
2. To expose the undergraduate students to the practical implementation of C Programming concepts.
3. To improve students capability in applying C Programming for problem solving.
4. To make students use effective memory management techniques in programming.
5. To expose students to modular programming concepts in problem solving.

**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. Arithmetic Operations.

b. Area and Circumference of a circle.

c. Swapping with and without Temporary Variables.

**Week 4 :** Programs using Branching statements.

a. To check the number as Odd or Even.

b. Greatest of Three Numbers.

c. Counting Vowels.

d. Grading based on Student's Mark.

**Week 5 :** Programs using Control Structures.

a. Computing Factorial of a number.

b. Fibonacci Series generation.

c. Prime Number Checking.

d. Computing Sum of Digit.

**Week 6 :** Programs using String Operations.

a. Palindrome Checking.

b. Searching and Sorting Names.

**Week 7** : Programs using Arrays

**Week 8** : Programs using Functions.

a. Computing nCr.

b. Factorial using Recursion.

c. Call by Value and Call by Reference

**Week 9:** Programs using Structure.

a. Student Information System.

b. Employee Pay Slip Generation.

c. Electricity Bill Generation

**Week 10:** Programs using Pointers.

a. Pointer and Array.

b. Pointer to function.

c. Pointer to Structure

**Week 11:** Programs using File Operation.

a. Counting No. of Lines, Characters and Black Spaces.

b. Content copy from one file to another.

c. Reading and Writing Data in File

**Text Books :**

1. J. B. Dixit, "Computer Fundamentals and Programming in C", Firewall Media, 2009.
2. Balagurusamy. E, "Programming in ANSI C", Tata McGraw Hill, Sixth edition, 2012.

**Course Outcomes :**

1. Learn practical implementation of C programming language concepts.
2. Debug and document programs in C.
3. Know usage of logical skills in developing C programs.
4. Apply effective memory management techniques for problem solving.
5. Understand the file management techniques.

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

## ENGINEERING PHYSICS AND CHEMISTRY LAB

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

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

**OBJECTIVES :**

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

**PHYSICS LAB (CYCLE-1)**

(Any Six Experiments compulsory)

- Determination of Eenergy gap of semiconductor material of p-n junction diode.
- Determination of frequency of electrical vibrator by using Melde's experiment.
- Determination of wavelength of LASER by using diffraction grating.
- Determination of rigidity modulus of a given wire using Torsional pendulum.
- R-C circuit analysis.
- Determination of Numerical aperture of a given optical fiber.
- Determination of the radious of curvature of plano-convex lens by forming Newton's rings.
- LED-characteristics.

**CYCLE-2**

**CHEMISTRY LAB**

- Determination of total hardness of water by complexometric method using EDTA.
- Estimation of an HCl by Conductometric titrations.
- Estimation of Acetic acid by Conductometric titrations.
- Estimation of HCl by Potentiometric titrations.
- Determination of rate constant of acid catalysed hydrolysis of methyl acetate
- Synthesis of Aspirin and Paracetamol.

- Thin layer chromatography calculation of $R_f$ values. egortho and para nitro phenols.
- Verification of freundlich adsorption isotherm-adsorption of acetic acid on charcoal.
- Determination of viscosity of castor oil and ground nut oil by using Ostwald's viscometer.
- Determination of surface tension of a give liquid using stalagmometer.

**Laboratory Manuals :**

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

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

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

**B.Tech. I Year II Semester** **L T P C**
**3 1 0 4**

**Objectives :**
To learn

- Methods of solving the differential equations of first and higher order.
- Evaluation of multiple integrals and their applications.
- The physical quantities involved in engineering field related to vector valued functions. The basic properties of vector valued functions and their applications to line, surface and volume integrals.

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

**UNIT-II: Ordinary Differential Equations of Higher Order**
Second order linear differential equations with constant coefficients: Non-Homogeneous terms of the type $e^{ax}$, 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 order of integration (only Cartesian form); Evaluation of Triple Integrals: Change of variables (Cartesian to polar) for double and (Cartesian to Spherical and Cylindrical polar coordinates) for triple integrals.

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

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

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

**Course outcomes :**

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

- Identify whether the given differential equation of first order is exact or not.
- Solve higher differential equation and apply the concept of differential equation to real world problems.
- Evaluate the multiple integrals and apply the concept to find areas and volumes, Evaluate the line, surface and volume integrals and converting them from one to another.

**Text Books :**

- B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36thEdition, 2010.
- Erwin kreyszig, Advanced Engineering Mathematics, 9thEdition, John Wiley &Sons,2006 G.B. Thomas and R.L. Finney, Calculus and Analytic geometry, 9thEdition,Pearson, Reprint, 2002.

**References :**

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

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

## (J2202) BASIC ELECTRICAL & ELECTRONICS ENGINEERING

**B.Tech I Year II SEM: CSE,MECH,CIVIL** **L T P C**
**2 1 0 3**

**Course Objective :**

1. To understand the concepts of Basis Electrical Engineering parameters, quantities, and network theorems.
2. To analyze the steady state analysis of AC and DC circuits.
3. To Study the construction operation and analysis of transformers, DC and AC machines.
4. To Study the Operational Characteristics of Diodes and Rectifier Circuits.
5. To Study the Operational Characteristics of transistor, characteristics and its applications.

**UNIT- I**

**Electrical Circuits:** Circuits concept, R-L-C Parameters, Voltage and Current sources, Source Transformation, V–I relationship for Passive elements, Kirchoff's Laws, Network reduction techniques – series, parallel, series parallel, star/delta transformations, Nodal Analysis, Mesh analysis with DC excitations.

**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**: Constructional features, Methods of Excitation, E.M.F. Equation and Applications, Torque development in D.C motor, Characteristics of DC motors, losses, Efficiency, Swinburne's test, Speed control of DC Shunt motors

**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-I characteristic(Forward and Reverse), Temperature dependence, Ideal versus practical, Static and dynamic resistances.

**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 CC configurations.

**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 fundamentals only).

**TEXT BOOKS :**

1. Electronic Devices and Circuits – R.L. Boylston and Louis Nashelsky, PEI/PHI, 9th Ed, 2006.
2. Engineering circuit analysis- by William Hayt and Jack E. Kemmerly, Mc Graw Hill Company, 6th edition.
3. Electrical Machines – by P.S.Bimbra.

**REFERENCES :**

1. Introduction to Electronic Devices and Circuits-Rober T. Paynter, Pearson Education.
2. Electronic Devices and Circuits -- K. Lal Kishore, B.S. Publications, 2nd Edition, 2005.
3. Electrical Machines – by J.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 and Parameters.
2. The operational characteristics of A.C circuits and parameters.
3. Operation of the transformers in the energy conversion process, electromechanical. Energy conversion, construction operation characteristics of DC machines.
4. The constructional features and also fundamental and characteristics of diode and Rectifier Circuit.
5. The constructional features and also fundamental and characteristics of transistor. With which he/she can able to apply the above conceptual things to real-world electrical and electronics problems and applications.

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

## (J1011) (J2011) ENGLISH

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

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

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

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

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

**Course Outcomes :** Students should be able to

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

**SYLLABUS**
**UNIT –I**

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

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

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

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

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

**UNIT –II**

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

**Vocabulary:** Synonyms and Antonyms.

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

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

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

**UNIT –III**

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

**Vocabulary**: Acquaintance with Prefixes and Suffixes from Foreign Languages in English to form Derivatives-Words from Foreign Languages and their Use in English.

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

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

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

**UNIT –IV**

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

**Vocabulary**: Standard Abbreviations in English.

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

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

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

**UNIT –V**

**'How a Chinese Billionaire Built Her Fortune' from the prescribed textbook 'English for Engineers' published by Cambridge University Press. Vocabulary**: Technical Vocabulary and their usage.

**Grammar :** Common Errors in English.

**Reading :** Reading Comprehension-Exercises for Practice.

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

**Prescribed Textbook :**

1. Sudarshana, N.P. and Savitha, C. (2018). English for Engineers. Cambridge University Press.

**References :**

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

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

## (J2503) OBJECT ORIENTED PROGRAMMING

**Common To**
**B.Tech. I Year II Sem: CSE, ECE, EEE**

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**Course Objectives :**

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

**Syllabus**

**UNIT- I**

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

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

**Token, Expression and Control Structures:** Tokens, Keywords, Identifiers and Constants, Data Types, Operators, Precedence, Type Compatibility, Control Structures, New Features of C++. **Functions:** Function Prototype and Parameter Passing, Inline Functions, Default, Constant Arguments, Recursion, Function Overloading, Function Template.

**UNIT - II**

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

**UNIT - III C++ operator overloading:** Fundamentals, restrictions, overloading unary / binary operators, overloading ++ and —, Manipulation of Strings. **C++ Inheritance:** Defining derived classes, Types of Inheritance, Virtual Base class Abstract Class, Nesting of classes.

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

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

**UNIT-V C++ Templates:** Introduction, class templates, member function template, overloading template functions. **C++ Exception Handling:** Try, throw, catch.

**Text Books :**

1. E. Balagurusamy **"**Object Oriented Programming with C++" , McGraw-Hill Education (India), 6th Edition 2013.
2. Bjarne Stroustrup "The C++ Programming Language", Pearson Education, 5th Edition (2013).
3. Robert Lafore **"**Object-Oriented Programming in C++ " 4th Edition Sams Publishing, 2002.

**Reference Books :**

1. K.R. Venugopal, Rajkumar, T.Ravishankar, "Mastering C++", McGraw-Hill Education India Pvt.Ltd, Second Edition, ISBN: 0-07-463454-2, 1997. 2. Timothy Bud, "An Introduction to Object Oriented Programming", Pearson Education, Second Edition, ISBN 81-7808-228-4, 2004.

**Course Outcomes :**

1. Know the differences between procedural language and object-oriented languages.
2. Gain knowledge of Object-Oriented Paradigm for problem solving.
3. Will be able to gain practical knowledge of OOP concepts using C++.
4. Apply reusability concepts like inheritance, polymorphism in application development.
5. Use generic programming concepts and modular programming.

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# JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
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## (J2504) OBJECT ORIENTED PROGRAMMING LAB

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

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**Course Objectives :**

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

**LIST OF EXPERIMENTS :**

**Experiment-I**

1. Read 10 numbers and displays them in sorted order.
2. Write functions to swap two numbers using pointers and references.
3. Write a program that prints the sizes of the fundamental types, a few pointer types and a few enumeration of your choice. Use the size of operator.

**Experiment-II**

4. Write a function that counts the number of occurrences of pair of letters in a string, for example the pair “ab” appears twice in “xabaacbaxabb”.
5. Find LCM of two, three and four numbers using function overloading.
6. Create a structure for storing students details (sno, sname, course, Array of five subject’s marks) provide the functions for printing the total marks, calculating percentage and the result. (Note: Include the functions within the structure).

**Experiment-III**

7. Write a macro to find square (A+B)-square (C+D).
8. Create a class for complex number and provide methods for addition, subtraction, multiplication and division. Display the output in “a+ib” form.
9. Create a Distance class and provide methods for addition and subtraction of two distances.

**Experiment-IV**

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

**Experiment-V**

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

**Experiment-VI**

15. Create a user defined array class Array and overload + to add two arrays, overload * to multiply two arrays, overload [] to access given position element and also to use left side of an assignment operator.
16. Create a complex number class and overload +, -, * operators using friend functions.
17. Program to perform Matrix operations using operator overloading with friend functions.

**Experiment-VII**

18. Programs to demonstrate Single, Multiple, Multilevel, Hierarchical, Hybrid and Multipath inheritance.
19. Programs to demonstrate constructors in inheritance.

**Experiment-VIII**

20. Create a Shape class with methods perimeter, area. Derive classes Circle, Square and Triangle from Shape class. Provide implementation for perimeter, area in the derived classes. (Declare perimeter, area as pure virtual functions).
21. Implement Multipath inheritance by declaring pointers to base class and access the derived class methods using base class pointers.
22. Program to demonstrate of manipulators.

**Experiment-IX**

23. Write a function template to overload max method, which can find maximum of any data type.
24. Create function template to sort an array, which can sort array of any type.
25. Create a Generic calculator class to perform +, -, *, / operations on any type.

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

**Experiment-X**

27. Find the roots of a quadratic equation. Handle exception for divide by zero.
28. Handle the Array Index out of Bounds Exception when accessing the elements of Arrays.
29. Create a text file of student information and display the contents of file.

**Experiment-XI**

30. Write a program to read a text file and remove all white space characters and replace each alphanumeric character with next character in the alphabet (Replace z by a and 9 by 0).
31. Copy the contents of one file into another except the blank lines using command line arguments.
32. Create a file with floating point numbers. Read pair of floating numbers from the file and write into another file.

**Experiment-XII**

33. Read the contents of three files concatenate them and display it.
34. Write complex numbers into a file in binary format and in character format.
35. Create a class with integers and overload << to place integer into a file and overload >> to read an integer.

**Course Outcomes :**

After completion of the course, the student will be able to…

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

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

3: Debug and document programs in C++.

4: Develop applications using modularization technique.

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

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# JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
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## (J2203) BASIC ELECTRICAL & ELECTRONICS ENGINEERING LAB

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

**0 0 3 1.5**

**List of Experiments :**

1. Verification of Kirchhoff's Laws.
2. Verification of superposition and Reciprocity Theorems.
3. Verification of Maximum Power transfer theorem.
4. Experimental Determination of Thevenin's theorem.
5. Magnetization characteristics of DC Shunt Generator.
6. Swinburne's Test on DC shunt machine.
7. Brake test on DC shunt motor.
8. OC & SC tests on single phase transformer.
9. PN Junction Diode characteristics (Forward bias, Reverse bias).
10. Zener Diode Characteristics.
11. Transistor CE Characteristics (Input and Output).
12. Rectifier without filters (Full wave & Half wave).
13. Rectifier with filters (Full wave & Half wave).

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

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# JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
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## (J1012) (J2012) ENGLISH LANUAGE COMMUNICATION 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 language learning.
- To sensitize the students to the nuances of English speech sounds, word accent, intonation and rhythm.
- To bring about a consistent accent and intelligibility in students' pronunciation of English by providing an opportunity for practice in speaking
- To improve the fluency of students in spoken English and neutralize their mother tongue influence.
- To train students to use language appropriately for public speaking, group discussions and interviews.

**Learning Outcomes:** Students will be able to attain

- Better understanding of nuances of English language through audio- visual experience and group activities.
- Neutralization of accent for intelligibility.
- Speaking skills with clarity and confidence which in turn enhances their employability skills.

**Syllabus :**

**The language Lab shall have two parts :**

Computer Assisted Language Learning (CALL) Lab.

Interactive Communication Skills (ICS) Lab.

**Listening Skills :**

**Objectives :**

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

- Students should be given practice in listening to the sounds of the language to be able to recognize them, to distinguish between them to mark stress and recognize and use the right intonation in sentences.
- Listening for general content.
- Listening to fill up information.
- Intensive listening.
- Listening for specific information.

**Speaking Skills :**

**Objectives :**

- To make students aware of the role of speaking in English and its contribution to their success.
- To enable students to express themselves fluently and appropriately in social and professional contexts.
- Oral practice.
- Describing objects/situations/people.
- Role play.
- Just A Minute (JAM) Sessions.

**Reading Skills :**

**Objectives :**

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

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

**NOTE:** The students will be trained in reading skills using the prescribed text for detailed study. They will be examined in reading and answering questions using 'unseen' passages which may be taken from authentic texts, such as magazines/newspaper articles.

**Writing Skills :**

**Objectives :**

- To develop an awareness in the students about writing as an exact and formal skill.
- To equip them with the components of different forms of writing, beginning with the lower order ones. Writing sentences.

- Use of appropriate vocabulary.
- Paragraph writing.
- Coherence and cohesiveness.
- Narration / description.
- Note Making.
- Formal and informal letter writing.

**The following course content is prescribed for the Lab.**

**Exercise – I**

**CALL Lab** :

Understand : Listening Skill- Its importance – Purpose- Process- Types- Barriers of Listening.

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

**ICS Lab** :

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

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

**Exercise – II**

**CALL Lab**:

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

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

**ICS Lab**:

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

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

**Exercise - III**

**CALL Lab:**

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

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

**ICS Lab**:

Understand: How to make Formal Presentations.

Practice: Formal Presentations.

**Exercise – IV**

**CALL Lab**:

Understand: Listening for General Details.

Practice: Listening Comprehension Tests.

**ICS Lab**:
Understand: Public Speaking – Exposure to Structured Talks.

Practice: Making a Short Speech – Extempore.

**Exercise – V**
**CALL Lab :**
Understand: Listening for Specific Details.

Practice: Listening Comprehension Tests.

**ICS Lab**:
Understand: Interview Skills.

Practice: Mock Interviews.

**Minimum Requirement of infrastructural facilities for ELCS Lab:**

**1. Computer Assisted Language Learning (CALL) Lab** has to accommodate 40 students with 40 systems, with one Master Console, LAN facility and English language learning software for self- study by students.

**System Requirement (Hardware component) :**
Computer network with LAN facility (minimum 40 systems with multimedia) with the following specifications :

i) Computers with Suitable Configuration.

ii) High Fidelity Headphones.

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

**Prescribed Lab Manuals:**

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

**Suggested Software :**

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

**References :**


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

# JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
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## (J2507) IT AND ENGINEERING WORKSHOP

**B.Tech. I Year II SEM: CSE**

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**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, and Presentation.
2. To introduce to a personal computer and its basic peripherals, the process of assembling a personal computer, installation of system software like MS Windows, Linux and the required devicedrivers, hardware and software level troubleshooting process.
3. To introduce connecting the PC on to the internet from home and workplace and effectively usage of the internet, Usage of web browsers, email, newsgroups and discussion forums.
4. To introduce the usage of Productivity tools in crafting professional word documents, excel spreadsheets and power point presentations using open office tools and LaTeX.
5. To provide hands on experience about use of different engineering materials, tools,equipments and processes those are common in the engineering field.

**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 done should be verified by the instructor and followed by a viva.

**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.

**Problem 5 : Search Engines & Netiquette:** Students should know what search engines are and how to use the search engines. A few topics would be given to the students for which they need to search on Google. This should be demonstrated to the instructors by the student.

**Problem 6: Cyber Hygiene:** Students would be exposed to the various threats on the internet and would be asked to configure their computer to be safe on the internet. They need to first install antivirus software, configure their personal 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/or worms.

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

**Problem 7: Document Preperation:** The mentor needs to give an overview of LaTeX and FOSS tools: Importance of LaTeX and FOSS tools for text processing, Details of the four tasks and features that would be covered in each, Using LaTeX and text Processor – Accessing, overview of toolbars, saving files, Using help and resources, rulers, format painter.

**Problem 8: Using LaTeX and FOSS Text Processing Tools** to create project certificate. Features to be covered: Formatting Fonts, Drop Cap, Applying Text effects, Using Character Spacing, Borders and Colors, Inserting Header and Footer, Using Date and Time option in both LaTeX and FOSS Text Processing Tools.

**Problem 9 : Text Layouts :**abstract Features to be covered:-Formatting Styles, Inserting table, Bullets and Numbering, Changing Text Direction, Cell alignment, Footnote, Hyperlink, Symbols, Spell Check, Track Changes.

**Problem 10 : Creating a Newsletter:** Features to be covered:- Table of Content, Newspaper columns, Images from files and clipart, Drawing toolbars and text highlights, Formatting Images, Textboxes and Paragraphs using FOSS.

**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, Using help and resources, Creating a Scheduler **,** Gridlines, Format Cells, Summation, auto fill and Formatting Text.

**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 this problem includes: Slide Layouts, Inserting Text, Text high lighting Formatting 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's asked).

**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, notes etc), Inserting – Background, textures, Design Templates, Hidden slides.

**Engineering Workshop :**

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

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

**Text Books :**

1. Introduction to Information Technology, ITL Education Solutions limited, Pearson Education.
2. LaTeX Companion – Leslie Lamport, PHI/Pearson.
3. Introduction to computers, Peter Norton, 6/e Mc Graw Hill.
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. IT Essentials PC Hardware and Software Companion Guide Third Edition.
7. PC Hardware and A+ Handbook – Kate J. Chase PHI.
8. Workshop Manual – P.Kannaiah / K.L.Narayana/Scitech Publishers.

**Course Outcomes :**

1. Apply knowledge for computer assembling and software installation.
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, Search Engines.
5. Ability to apply the knowledge of FOSS and Practice on manufacturing of components using workshop trades including plumbing,fitting, carpentry, tinsmithy and house wiring.

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

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# JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
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## (J3005) PROBABILITY AND STATISTICS

**B.Tech II-Year I-Semester- CSE**

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**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 their properties.
2. The basic ideas of statistics including measures of central tendency, correlation and regression.
3. The statistical methods of studying data samples.

**UNIT – I**

**Basic Probability:** Probability spaces, conditional probability, independent events, and Bayes' theorem.Random variables: Discrete and continuous random variables, Expectation of Random Variables, Moments, Variance of random variables, Chebyshev's Inequality.

**UNIT – II**

**Discrete Probability distributions:** Binomial, Poisson, evaluation of statistical parameters for these distributions, Poisson approximation to the binomial distribution.

**UNIT – III**

**Continuous Random variable & Distributions:** Continuous random variables 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 for single mean, difference of means for small samples, test for ratio of variances for small samples.

**Text Books :**

1. Ronald E. Walpole, Raymond H. Myers, Sharon L. Myers, keying Ye, Probability and statistics for engineers and scientists, 9thEdition, Pearson Publications.
2. Fundamentals of Mathematical Statistics, Khanna Publications, S C Guptha and V.K. Kapoor.

**References :**

1. Miller and Freund's, Probability and Statistics for Engineers, 8thEdition, Pearson Educations.
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 II Sem.: ECE** **L T P C**

**II Year I Sem:CSE** **3 0 0 3**

**COURSE OBJECTIVE :**

1. This Subject exposes the students to learn Digital Fundamentals.
2. Student will be able to Design, Analyze and Interpret Combinational Digital Circuits.
3. Student will be able to Design, Analyze and Interpret Sequential Digital Circuits.
4. Learn logic principles to various combinational and sequential circuits.
5. Understands the concepts of logic families.

**UNIT- I : NUMBER SYSTEMS & BOOLEAN ALGEBRA**

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

**UNIT-II : GATE LEVEL IMPLEMENTATION AND MINIMIZATION**

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

**UNIT-III : COMBINATIONAL LOGIC DESIGN**

Combinational Circuit, Analysis Procedure, Design Procedure, Examples of Combinational Digital Circuits(Adders, Subtractor, Adder-Subtractor etc.) Serial and parallel adders, BCD Adder. Comparators, Multiplxers, Demultiplexer, Encoder, Decoder. Hazards in Combinational Circuits, Hazards free realization.

**UNIT-IV : SEQUENTIAL LOGIC DESIGN**

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

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

**TEXT BOOKS :**

1. Maris Mano: “Digital Design” Prentice Hall 1993.
2. RP Jain : Modern Digital Electronics Tata McGraw Hill 4th Edition 2009.

**REFERENCE BOOKS :**

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

**Course Outcomes :**

1. Student understands Digital logic Principles, Number systems etc.
2. Understands the Binary logic principles in implementing Gate level Design.
3. Understands and applying the Combinational Circuits.
4. Understands and applying the sequential circuit logic in applications of Memeories, Registers, Flip-Flops and counters.
5. Understands and applying the Various logic level in Logic families.

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# JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
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## (J3419) COMPUTER ORGANIZATION

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

**Objectives :**

1. To understand basic components of computers.
2. To explore the I/O organizations in depth.
3. To explore the memory organization.
4. Organization of I/O devices.
5. Pipelining concepts.

**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, Computer instructions, Instruction cycle, Instruction formats, Addressing Modes, STACK organization.

**UNIT II:**

**PROGRAM CONTROL:** Status Bit Conditions, Conditional Branch Instructions, Program Interrupts: Types Of Interrupts.

**MICROPROGRAMMED CONTROL**: Control memory, hard wired control, Micro programmed control, Address sequencing, micro program example, design of control unit.

**UNIT III:**

**MEMORY ORGANIZATIONS:** Memory hierarchy, Main Memory, RAM, ROM Chips, Memory Address Map, Memory Connection to CPU, Associate memory, Cache Memory, Virtual memory.

**UNIT-IV:**

**INPUT-OUTPUT ORGANIZATION** : Peripheral Devices, Input Output Interface, Asynchronous data transfer, Modes of Transfer, Priority Interrupt, Direct memory Access, Input –Output Processor (IOP), Serial communication.

**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, McGraw Hill.
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 David A. Patterson, Fourth Edition, Elsevier.
5. Computer Architecture: Fundamentals and principles of Computer Design, Joseph D. Dumas II, BS Publication.

**Course outcomes:**

1. Ability to model, understands, and develops complex software for system software as well as application software.
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 information in different forms, e.g., different bases, signed integers, various codes such as ASCII, Gray, and BCD.
4. Be able to understand about the memory of computer in detail.
5. Be able to design and analyze combinational circuits and to use standard combinational functions/building block to build more complex circuits.

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

## J3E12 ORGANIZATIONAL BEHAVIOR

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**Course objectives :**

1. Define basic organizational principles and analyze how these influences behavior in the work place.
2. Discuss the theories of motivation and leadership Familiarize.
3. The students with the basic understanding of individual behavior and explore issue of power ,politics, conflicts and negotiations.
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 management researchers.
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 be inaccurate.
5. Clarification of individual views that build learning.

**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 most feasible plan, implement decision and control, Plans, types of plans, steps involved in planning process.

**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, personality theories, perception, perception and individual decision making; formation of group behavior, classification of groups, group properties, group cohesiveness, group decision making process and types.

**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. Stephen P. Robbins, Timothy: Organizational Behavior, Pearson 14th Edition, 2012.
3. L. M. Prasad, Principles and Practices of Management, Revised Edition, Sulthan Chand Publushings.
4. Udai Pareek, Sushma Khanna, Organizational Behavior, 3e, Oxford Publishing.
5. Kavitha Sigh, Organizational behavior, Text and Cases, 3/e, Vikas publishing
6. Griffin & Moorhead, Organizational Behaviour, 10th Edition, Cengage Publishing.

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

## (J3508) DATA STRUCTURES

**B.Tech. II Year I Sem: CSE**

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**Course Objectives :**

1. Basic data structures and its usage in handling real world applications.
2. Representing the data using linear data structures such as queues, circular queues, dequeue, priority queue, and using non-linear data structures such as trees.
3. Representing and retrieving the data in the form of various types of trees and graph data structures.
4. Searching of data with the help of various search methods, to sort data using various sorting methods.
5. Store and retrieve data effectively using various hashing methods.

**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, Evaluation of expressions- Expressions, Postfix notations, Infix to postfix, Infix to prefix.

**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, Inorder traversal, Preorder traversal, Postorder traversal, 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 search tree.

**UNIT - III**

**Graphs:** The graph abstract data type- Introduction, Definition, Graph representation, Elementary graph operations- Depth first search, Breadth first

search, Connected components, Spanning trees, Minimum cost spanning trees- Kruskal's algorithm, Prim's algorithms, Shortest paths- All pairs shortest paths.

**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, Fibonacci search, Sorting-Types of sorting, General sort concepts, Bubble sort, Insertion sort, Selection sort, Quick sort, Heap sort, Merge sort, Comparison of all sorting methods.

**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. Implement the basics of data structures in handling real world applications.
2. Represent data using linear data structures such as queues, circular queues, dequeue, priority queue, and using non-linear data structures such as trees and graphs.
3. Represent and retrieve the data in the form of various non-linear data structures like trees and graphs.
4. Search for data with the help of various searching techniques 5.Store and retrieve data using various hashing techniques.

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

## (J3509) DATA STRUCTURES LAB

**B.Tech. II Year I Sem: CSE** **L T P C**
**0 0 4 2**

**Course Objectives :**

This course will develop students' knowledge in/on.

1. Concepts, operations and implementation details of various data structures.
2. Implementing the different algorithms using C++ programming language.
3. Improving the student capability in applying various data structures in different applications.
4. Different types of sorting techniques.
5. Different types of searching techniques.

**LIST OF EXPERIMENTS :**

**Experiment-I**

1. Program to implement array operations.
2. Program to display sparse representation for a given m*n matrix.
3. Program to read a sparse matrix and display its transpose.

**Experiment-II**

4. Program to perform addition of two sparse matrices.
5. Program to implement stack operations using arrays.

**Experiment-III**

6. Program to implement multiple stacks in single array.
7. Program to convert infix expression into postfix.
8. Program to convert given infix expression into prefix notation.
9. Program to evaluate given postfix expression.

**Experiment-IV**

10. Program to implement queue operations using arrays.
11. Program to implement circular queue operations using arrays.

**Experiment-V**

12. Program to create single linked list and implement its operations.

i. Insert.

ii. Delete.

iii. Search.

iv. Reverse.

13. Program to create single linked list and implement its operations with separate header node.

i. Insert.

ii. Delete.

iii. Search.

iv. Reverse.

**Experiment-VI**

14. Program to implement double linked list and its operations.

15. Program to implement double linked list and its operations with separate header node.

**Experiment-VII**

16. Program to implement circular single linked list and its operations.

17. Program to implement circular double linked list and its operations.

**Experiment-VIII**

18. Program to implement stack operations using linked list.

19. Program to implement queue operations using linked list.

**Experiment-IX**

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

21. Program to create a binary search tree and perform the tree operations.

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

**Experiment-X**

22. Implement the following graph traversal techniques.

a) Depth first search b) Breadth first search.

**Experiment-XI**

23. Program to implement Fibonacci Search.

24. Program to implement insertion sort technique.

25. Program to implement selection sort technique.

26. Program to implement quick sort technique.

**Experiment-XII**

27. Program to implement merge sort technique.

28. Program to implement heap sort technique.

**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 able to…

1. Know practical knowledge about implementing various data structures using C++.
2. Understand the knowledge about how various data structures will be implemented like Arrays, stacks, queues, linked list, trees, and graphs.
3. Implement various sorting techniques.
4. Implement various searching techniques.
5. Apply these data structures efficiently to develop different software applications.

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

## (J3510) SCRIPTING LANGUAGES LAB

**B.Tech II Year I-Sem: CSE** **L T P C**
**0 0 4 2**

**Course Objectives :**

1. Effectively applies knowledge of Perl, PHP and Python to new situations and learns from the experience.
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 designing and implementing software systems in Perl ,PHP and Python;
4. Evaluate and compare designs of such systems on the basis of specific requirements and constraints.
5. Design and implement Perl,PHP and Python software solutions that accommodate specified requirements and constraints, based on analysis or modelling or requirements specification.

**LIST OF EXPERIMENTS :**

**This course provides an introduction to the script programming paradigm, and introduces scripting languages such as Perl, PHP and Python.**

**PERL :**

1. a) Write a Perl script to find the largest number among three numbers.
   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. Write a Perl script to substitute a word, with another word in a string.
4. Write a Perl script to validate IP address and email address.
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 between 1-50.
2. PHP script to

a. Find the length of a string.

b. Count no of words in a string.

c. Reverse a string.

d. Search for a specific string.

3. Write a PHP script to merge two arrays and sort them as numbers, in descending order.
4. Write a PHP script that reads data from one file and write into another file.

**PYTHON :**

1. Write a python program to solve a quadratic equation.
2. a) Write a python program to find the factorial of a number.

   b) Write a python program to generate Fibonacci series.
3. Write a python program to make a simple calculator.
4. Write a python program to sort words in alphabetical order.
5. Write a python program to add two matrices.

**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. Programming Python, 4th edition. Powerful Object-Oriented Programming. Mark Lutz. O'Reilly, 2010.

**Course Outcomes :**

1. Comprehend the differences between typical scripting languages and typical system and application programming languages.
2. Gain knowledge of the strengths and weakness of Perl.
3. Gain knowledge of the strengths and weakness of PHP.
4. Gain knowledge of the strengths and weakness of Python.
5. Select an appropriate language for solving a given problem.

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# JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES
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## (JMC01) ENVIRONMENTAL STUDIES

**B.Tech.- II Yr I Sem: Common to all** **L T P C**
**3 0 0 0**

**COURSE OBJECTIVES :**

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

**UNIT-I:**
**ECOSYSTEMS**

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

**UNIT-II:n**
**Natural Resources:**

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

**UNIT-III:**
**Biodiversity And Biotic Resources:**

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

**UNIT-IV:**
**Environmental Pollution and Control Technologies :**
**Environmental Pollution:**

Classification of pollution, **Air Pollution:** Primary and secondary pollutants, Automobile and Industrial pollution, Ambient air quality standards. **Water pollution:** Sources and types of pollution, drinking water quality standards.

**Soil Pollution:** Sources and types, Impacts of modern agriculture, degradation of soil. **Noise Pollution:** Sources and Health hazards, standards, **Solid waster:** Municipal Solid Waste management, composition and characteristics of e-Waste and its management. **Pollution control technologies:** Wastewater Treatment methods: Primary, secondary and Tertiary.

**UNIT-V**

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

**SUGGESTED TEXT BOOKS:**

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

**REFERENCE BOOKS :**

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

**COURSE OUTCOMES :**

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

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

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

## (J4004) DISCRETE MATHEMATICS

**B.Tech. II Year II SEM: CSE**

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**Course Objectives :**

1. To introduce Mathematical Logic, especially First Order Logic to students intending to graduate in Computer Science.
2. To introduce proof techniques such as Mathematical Induction and Contradiction.
3. To Develop an understanding of counting, functions and relations.
4. To make the students familiar with fundamental notions and applicability of algebraic systems.
5. To make the students familiar with fundamental notions of graph theory.

**UNIT-I**

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

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

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

**UNIT-II**

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

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

**UNIT-III**

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

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

**UNIT-IV**

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

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

**UNIT-V**

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

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

**Text books :**

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

**Reference Books :**

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

**Course Outcomes :**

1. Distinguish between Propositional Logic and Predicate Logic.
2. Apply induction and other proof techniques towards solving recurrences and other problems in elementary algebra.
3. Have an understanding of elementary combinatorics.and distinguish between functions and relations.
4. Deal with problems which may arise in Computer Science and Engineering in near future.
5. Better equipped for examinations involving placement opportunities.

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

## (J4511) DESIGN AND ANALYSIS OF ALGORITHMS

**B.Tech. II Year II Sem: CSE**

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**Course Objectives :**

This course will develop students' knowledge in/on

1. Techniques for effective problem solving in computing.
2. Analyzing the algorithms and calculating their complexity.
3. Designing algorithms using greedy strategy, divide and conquer approach and dynamic programming.
4. Backtracking and least cost search.
5. Fundamental computability concepts and the complexity of classes P, NP and NP-complete.

**Syllabus:**

**UNIT-I**

**Introduction:** Algorithm analysis, Performance analysis, Space complexity and time complexity, Big 'O' notation, Omega notation, Theta notation, Different mathematical approach's for solving Time complexity of Algorithms.

**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**

**Dynamic programming:** General method, Multistage graphs, All pairs shortest paths, Single source shortest paths**.** Optimal binary search trees, String editing, 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", 2nd Edition, Universities Press, 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 and invariants.
2. Analyze the time and space complexity of an algorithms.
3. Design algorithms using greedy strategy and dynamic programming.
4. Identify algorithm design methodology to solve problems.
5. Analyze the classes P, N and NP Complete and be able to prove that a certain problem is NP complete.

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

## (J4512) JAVA PROGRAMMING

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

**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, including defining classes, invoking methods, using class libraries, etc.
3. Be aware of the important topics and principles of software development.
4. Have the ability to write a computer program to solve specified problems.
5. Be able to use the Java SDK environment to create, debug and run simple Java programs.

**UNIT-I** :

**Java programming -** History of Java, Java buzzwords, comments, data types, variables, constants, scope and life time of variables, operators, operator hierarchy, expressions, type conversion and casting, enumerated types, control flow block scope, conditional statements, loops, break and continue statements, simple java stand alone programs, arrays, console input and output, formatting output, constructors, methods, parameter passing, static fields and methods, access control, this reference, overloading methods and constructors, recursion, garbage collection, building strings, exploring string class.

**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 classification of exceptions- exception hierarchy, checked exceptions and unchecked exceptions, usage of try, catch, throw, throws and finally, re throwing exceptions, exception specification, built in exceptions, creating own exception sub classes.

**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.

**GUI Programming with Java -** The AWT class hierarchy, Introduction to Swing, Swing vs, AWT, Hierarchy for Swing components, Containers - JFrame, JApplet, JDialog, JPanel, Overview of some swing components Jbutton, JLabel, JTextField, JTextArea, simple swing applications, Layout management - Layout manager types - border, grid and flow.

**Event handling -** Events, Event sources, Event classes, Event Listeners, Relationship between Event sources and 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, random access file operations, File management using File class.

**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.

**Connecting to Database -** JDBC Type 1 to 4 drives, connecting to a database, querying a database and processing the results, updating data with JDBC.

**Text Books :**

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

**References Books :**

1. Java for Programmers, P.J. Deitel and H.M. Deitel, Pearson education (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, Pearson Education.
5. Programming in Java, S. Malhotra and S. Choudhary, Oxford Univ. Press.

**Course Outcomes :**

1. Knowledge of the structure and model of the Java programming language.
2. Use the Java programming language for various programming technologies.
3. Develop software in the Java programming language.
4. Evaluate user requirements for software functionality required to decide whether the Java programming language can meet user requirements.
5. Propose the use of certain technologies by implementing them in the Java programming language to solve the given problem.

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

## (J4513) OPERATING SYSYTEMS

**B.Tech II Year II-Sem: CSE**

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**Course Objectives :**

1. To understand main components of OS and their working.
2. To study the operations performed by OS as a resource manager.
3. To understand the different scheduling policies of OS.
4. To understand the different memory management techniques.
5. To understand process concurrency, synchronization, input/output, storage and file management.

**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. Case studies UNIX, Linux, and Windows.**Memory Management:** Swapping, contiguous memory allocation, paging, structure of the page table, segmentation, virtual memory, demand paging, 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, file sharing,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, John Wiley,ISBN:-10:04->1694665.
2. Stallings, "Operating Systems – Internal and Design Principles", Fifth Edition–2005, Pearson education/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 operating systems.
2. Describe the various CPU scheduling algorithms and remove deadlocks.
3. Explain various memory management techniques and concept of thrashing.
4. Use disk management and disk scheduling algorithms for better utilization of external memory.
5. Recognize file system interface, protection and security mechanisms.

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

## (J4514) FORMAL LANGUAGES & AUTOMATA THEORY

**B.Tech II Year II-SEM: CSE**

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**Course Objectives :**

1. To classifies machines by their power to recognize languages.
2. To employ finite state machines to solve problems in computing.
3. To explain deterministic and non-deterministic machines.
4. To identify the given language is regular or not?
5. To comprehend the hierarchy of problems arising in the computer sciences.

**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 without Î transitions. NFA to DFA conversion, minimization of FSM, equivalence between two FSM's, Finite Automata with output- Moore and Melay machines.

**Regular Languages:** Regular sets, regular expressions, identity rules, Constructing finite Automata for a given regular expressions, Conversion of Finite Automata to Regular expressions. Pumping lemma of regular sets, closure properties of regular sets (proofs not required).

**UNIT III :**

**Grammar Formalism:** Regular grammars-right linear and left linear grammars, equivalence between regular linear grammar and FA, inter conversion, Context free grammar, derivation trees, and sentential forms.Right most and leftmost derivation of strings.

**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 of CFL, Acceptance by final state and acceptance by empty state and its

equivalence. Equivalence of CFL and PDA, interconversion. (Proofs not required). Introduction to DCFL and DPDA.

**Turing Machine:** Turing Machine, definition, model, design of TM, Computable functions, recursively enumerable languages. Church's hypothesis, counter machine, types of Turing machines (proofs not required).

**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 hard problems.

**Text Books :**

1. "Introduction to Automata Theory Languages and Computation". Hopcroft H.E. and Ullman J. D.Pearson Education
2. Introduction to Theory of Computation –Sipser 2nd edition Thomson

**Reference Books:**

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

**Course Outcomes :**

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

1. Define the basic kinds of finite automata and their capabilities.
2. Design deterministic and non-deterministic machines.
3. Apply the grammar and languages to design abstract computer machines and accomplish the Lemmas, Hypothesis for various languages.
4. Design push-down automata and turing machines.
5. Categorize languages into their types and model the logic and solutions to decidable and undecidable problems through compatability theory.

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

## (J4515) JAVA PROGRAMMING LAB

**B.Tech. II Year II-Sem: CSE**

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**Course Objectives :**

**This course will develop students' knowledge in/on.**

1. The concepts of java programming.
2. Debug and test java applications effectively.
3. Effective use of exceptional handling, packages and interfaces in develop applications.
4. I/O and GUI programming in java
5. Java compiler and eclipse platform.

**LIST OF EXPERIMENTS :**

1. a) Write a java program that prints all real solutions to the quadratic equation 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 real solutions.

   b) Write a java program that uses both recursive and non recursive functions to print the nth value in the Fibonacci sequence.

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

   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 or Not.

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 of the classes extends the class Shape. Each one of the classes contains only the method printArea() that prints the area of the given shape.
5. Write a program for packages.

6. Write a Java program that implements a multi-thread application that has three threads. First thread generates random integer every 1 second and if the value is even, second thread computes the square of the number and prints. If the value is odd, the third thread will print the value of cube of the number.
7. Write a java program that correctly implements producer consumer problem using the concept of inter thread communication.
8. a) Develop an applet that displays a simple message.
   b) Develop an applet that receives an integer in one text field, and computers its factorial Value and returns it in another text field, when the button named "Compute" is clicked.
9. Write a Java program that handles all mouse events and shows the event name at the center of the window when a mouse event is fired (Use Adapter classes).
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. Write a Java program that works as a simple calculator. Use a grid layout to arrange buttons for the digits and for the +, -, *, % operations. Add a text field to display the result. Handle any possible exceptions like divided by zero.
12. Write a Java program that creates a user interface to perform integer divisions. The user enters two numbers in the text fields, Num1 andNum2. The division of Num1 and Num2 is displayed in the Result field when the Divide button is clicked. If Num1 or Num2 were not an integer, the program would throw a Number Format Exception. If Num2 were Zero, the program would throw an Arithmetic Exception. Display the exception in a message dialog box.
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 message shown.
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 Grid Layout.

15. Implement the above program with database instead of a text file.
16. Write a Java program that takes tab separated data (one record per line) from a text file and inserts them into a database.
17. Write a Java program that connects to a database using JDBC and does add, delete, modify and retrieve operations.
18. Write a java program that prints the meta-data of a given table.

**Text Book :**

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

**Reference Books :**

1. Java for Programmers, P.J. Deitel and H.M. Deitel, Pearson education (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, Pearson Education.
4. Programming in Java, S. Malhotra and S. Choudhary, Oxford Univ. Press.

**Course Outcomes :**

1. Understand programming language concepts, particularly Java and object-oriented concepts.
2. Write, debug, and document well-structured Java applications.
3. Implement Java classes from specifications.
4. Create and use objects from predefined class libraries.
5. Build I/O and GUI applications with Java.

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

## (J4516) OPERATING SYSYTEMS LAB

**B.Tech II Year II-Sem: CSE** **L T P C**
**0 0 3 1.5**

**Course Objectives :**

1. To Know LINUX environment and basic OS commands.
2. To use LINUX operating system for study of operating system concepts.
3. To write the code to implement and modify various concepts in operating systems using Linux.
4. To implement different CPU scheduling algorithms, page replacement algorithms and dead lock avoidance algorithm.
5. To learn different types of file organization techniques.

**LIST OF EXPERIMENTS :**

1. Simulate the following CPU scheduling algorithms
   a. Round Robin
   b. SJF
   c. FCFS
   d. Priority
2. Simulate all file allocation strategies
   a. Sequential
   b. Indexed
   c. Linked
3. Simulate MVT and MFT
4. Simulate all File Organization Techniques
   a. Single level directory
   b. Two level
   c. Hierarchical
   d. DAG
5. Simulate Bankers Algorithm for Dead Lock Avoidance
6. Simulate Bankers Algorithm for Dead Lock Prevention
7. Simulate all page replacement algorithms
   a. FIF
   b. LRU
   c. LFU etc.
8. Simulate Paging technique of memory management.

**Text Books :**

1. Abraham Silberchatz, Peter B. Galvin "Operating System Concepts" Greg Gagne 7th Edition, John Wiley,ISBN:-10:04->1694665.
2. Stallings, "Operating Systems – Internal and Design Principles", Fifth Edition–2005, Pearson education/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 operating system.
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 and is able to analyze them related to common circumstances in operating systems.
4. The student is able to explain the basics of memory management.
5. Student is able to know the structure of the most common file-systems.

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

## GENDER SENSITIZATION (JMC02)

**B.Tech. II Year: All Branches**

| L | T | P | C |
|---|---|---|---|
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**Course Objectives :**

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

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

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

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

**UNIT – IV ISSUES OF VIOLENCE Sexual Harassment:**
Say No! (Towards a World of Equals: Unit -6) Sexual Harassment, not Eve-teasing- Coping with Everyday Harassment- Further Reading: "Chupulu". Domestic Violence: Speaking Out (Towards a World of Equals: Unit -8) Is Home a Safe Place? -When Women Unite [Film]. Rebuilding Lives. Additional Reading: New Forums for Justice. Thinking about Sexual Violence (Towards a World of Equals: Unit -11) Blaming the Victim-"I Fought for my Life.." – Additional Reading: The Caste Face of Violence.

**UNIT – V GENDER : CO – EXISTENCE Just Relationships:**
Being Together as Equals (Towards a World of Equals: Unit -12) Mary Kom and Onler. Love and Acid just do not Mix. Love Letters. Mothers and Fathers. Additional Reading: Rosa Parks-The Brave Heart.

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

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

**REFERENCE BOOKS :**


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


**Course Outcomes :**

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

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

## (J5518) DATABASE MANAGEMENT SYSTEMS

**B.Tech. III Year I-SEM CSE** **L T P C**
**3 0 0 3**

**Course Objectives :**
This Course provides an emphasis on

1. How to organize, maintain and retrieve information efficiently and effectively from a Database.
2. It presents an introduction to database management systems (DBMS) and relational data model.
3. Understanding the different issues involved in the design of a database system.
4. Identifying functional dependencies to normalize the relations of database.
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 database environments.

**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 ER Model.

**UNIT-II :**
Introduction to the Relational Model – Integrity Constraints over Relations, Enforcing Integrity constraints, Querying relational data, Logical data base Design, Introduction to Views –Destroying/altering Tables and Views. Relational Algebra – Selection and Projection, Set Operations, Renaming, Joins, Division, Examples of Algebra Queries, Relational calculus – Tuple relational Calculus – Domain relational calculus – Expressive Power of Algebra and calculus.

**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 in Data base Design – Multi valued Dependencies – FOURTH Normal Form.

**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- Based Protocols. Recovery and Atomicity – Log – Based Recovery – Recovery with Concurrent Transactions – Buffer Management – Failure with loss of nonvolatile storage-Advance Recovery systems- Remote Backup systems.

**UNIT–V :**

Data on External Storage, File Organization and Indexing – Clustered Indexes, Primary and Secondary Indexes, Index data Structures – Hash Based Indexing – Tree base Indexing, Comparison of File Organizations. Intuitions for tree Indexes, Indexed Sequential Access Methods (ISAM) B+ Trees: A Dynamic Index Structure.

**Text Books :**

1. Raghurama Krishnan, Johannes Gehrke " Data base Management Systems" TATA McGraw-Hill 3rd Edition.
2. Silberschatz, Korth "Data base System Concepts" McGraw hill, V Edition.

**Reference Books :**

1. Peter Rob and Carlos Coronel "Data base Systems design, Implementation, and Management" 7th Edition.
2. Elmasri Navrate "Fundamentals of Database Systems" Pearson Education.

**Course outcomes :**

1: Differentiate database systems from file system by understanding the features of database system and design a ER model for a database system.

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.

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

## (J5519) PRINCIPLES OF PROGRAMMING LAANGUAGES

**B.Tech. III Year I Sem: CSE**

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**Course Objectives :**

1. To introduces the major programming paradigms, and the principles and techniques involved in design and implementation of modern programming 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 passing mechanisms.
4. To introduce the concepts of ADT and object oriented programming for large scale software development.
5. To introduce the concepts of concurrency control and exception handling.

**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 free Grammars.

**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 passing methods, 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 in Smalltalk.

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

**UNIT – IV**

**Functional Programming** - Introduction to LISP, Exploring a List, Functions as First-class values, ML: types, function, List manipulation, Exception Handling in ML, Storage allocation for lists.

**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. Kenneth C.Louden "Programming Languages principles and Practice", 2nd Edition, Cengage Learning 2003.

**Course Outcomes :**

1. Master using syntax related concepts including context free grammars, parse trees, recursive descent parsing, printing, and interpretation.
2. Master analyzing semantic issues associated with function implementations, including variable binding, scoping rules, parameter passing, and exception handling.
3. Master implementation techniques for interpreted functional languages.
4. Be familiar with design issues of object oriented and functional languages.
5. Be familiar with language abstraction constructs of classes, interfaces, packages, and procedures.

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

## (AJ5454) MICRO PROCESSORS AND INTERFACING

**B.Tech.-III Yr I Sem.: CSE** **L T P C**

**3 0 0 3**

**COURSE OBJECTIVES** :

1. Understanding the importance of micro processors.
2. Understanding the application development skills by using various instructions.
3. Understanding the interfacing of devices with processors.
4. Understanding the interfacing of memory and data transfer operations.
5. Understanding the advanced micro processors.

**UNIT-I :**

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

**8086 Architecture:** 8086 Architecture-Functional diagram, Register Organization, Memory Segmentation, Programming Model, Memory addresses, Physical Memory Organization, Architecture of 8086, Signal descriptions of 8086, interrupts of 8086.

**UNIT-II :**

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

**UNIT -III :**

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

**IO Interfacing:** 8255 PPI – various modes of operation and interfacing to 8086. Interfacing Keyboard, Displays, 8279 Stepper Motor and actuators. D/A and A/D converter interfacing

**UNIT –IV :**

**DMA Interfacing**: Need for DMA, DMA Controllers architecture, Pin Description.

**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 & Trouble shooting.

**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. Micro Processor Architecture Programming and Applications with the 8085-Ramesh Goankar, 5th Edition,Penram International Publishing.
2. Advanced Microprocessors and Peripherals – A. K. Ray and K.M. Bhurchandani, TMH, 2nd Edition 2006.
3. The 8051 Microcontroller, Kenneth. J. Ayala, Cengage Learning, 3rd Ed.

**REFERENCE BOOKS :**

1. Microprocessors and Interfacing, D. V. Hall, TMGH, 2nd Edition 2006.
2. The 8051Microcontrollers, Architecture and Programming and Applications -K.Uma Rao, Andhe Pallavi, Pearson, 2009.

**Course Outcomes :**

- Understands the internal architecture and organization of 8085 and 8086 and 8051 processors/controllers.
- Understands the interfacing techniques to 8086 and 8051 and can develop assembly language programming to design microprocessor/ micro controller based systems.

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

## (J5520) WEB PROGRAMMING

**III Year B. Tech. I Sem CSE**

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**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 with servlets.
3. Designing a web page in JSP with different databases.
4. Understanding the basics of PHP.
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 and properties.

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

**UNIT-II :**

**JDBC:** Introduction to JDBC, Types of JDBC drivers, Different statement objects statement, Prepared statement, Callable statement, Batch updates.

**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:** The javax.servlet.http package, Handling http request and responses, Cookies session tracking, Security issues.

**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** :

**Introduction to PHP:** Overview of PHP, General server characteristics, Starting to script on server side, Syntax, Variables, Strings, Operators, if else, Loop, switch, array, function, Session, Exception, Form handling, Servers to run PHP.

**UNIT-V**

**Databases with PHP**: Working with MySQL database, Operations of database 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 database interfaces.

**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, (Chapters 4,5,6,7,12,13,14,16).

**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", 3rd Edition, Sams Publications, ISBN: 0-672-32672-8, 2005.
4. Jayson Falkner, Kevin Jones, "Servlets and Java Server Pages", 1st Edition, 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 JSP concepts.
4. Design and demonstrate on secured web page with PHP scripting.
5. Design architecture for accessing MySQL database with PHP.

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

## (J5521) ARTIFICIAL INTELLIGENCE
**(Professional Elective –I)**

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

**Course Objectives :**

1. To list the significance of AI.
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 of AI.
4. Apply the AI concepts to build an expert system to solve the real world problems.
5. To gain knowledge on Natural language Processing.

**Syllabus :**

**UNIT I** :

**Introduction & Problem Solving:** AI problems, AI Technique, Defining problem as a State- Space Search, Production Systems, Problem Characteristics, Production System Characteristics.

**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:** What is Learning, Rote learning, Learning by taking advice, 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. Russell Norvig, "Artificial Intelligence-Modern Approach", 3rd edition, 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 solving Techniques.
2. Determine and evaluate the various search strategies.
3. Compare and contrast the various "knowledge representation" schemes of AI.
4. Understand and analyze the various reasoning techniques involved in solving AI problems.
5. Understand the different learning techniques,apply the AI techniques to solve the real world problems.

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

## (J5522) ADHOC SENSOR NETWORKS
**(Professional Elective –I)**

**III Year B. Tech. I Sem: CSE** **L T P C**

**3 0 0 3**

**Course Objectives :**

1. To impart knowledge of adhoc networks, design and implementation issues, and available solutions.
2. To impart knowledge of routing mechanisms and the three classes of approaches: proactive, on-demand, and hybrid.
3. To provide knowledge of sensor networks and their characteristics.
4. Study the Applications of Sensor Networks.
5. To learn deployment of ad-hoc/sensor network.

**Syllabus :**

**UNIT I :**

Introduction to Ad-Hoc networks, Wireless LANs, Wireless PANs, Wireless Mesh 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 wireless networks.

**UNIT II** :

Introduction, Routing in Ad Hoc Networks, Broadcasting, Multicasting and Geocasting, Mobile Ad-Hoc Networking with a View of 4G Wireless: Imperatives and Challenges, Off-the-Shelf Enables of Ad Hoc Networks, IEEE 802.11 in Ad Hoc Networks: Protocols, Performance and Open Issues.

**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** :

Introduction to Sensor networks, Introduction and Overview of Wireless Sensor Networks: Applications of Wireless Sensor Networks, Examples of Category 1 WSN Applications, Basic Wireless Sensor Technology: Sensor Node Technology, Sensor Taxonomy, WSN Operating Environment, WSN Trends.

**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 Protocols for Wireless Sensor Networks: Fundamentals of MAC Protocols, 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, Sensor tasking and control, Transport layer and security protocols, Applications of Sensor Networks.

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

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

## (J5523) GRAPH THEORY
**(Professional Elective –I)**

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

**Course Objectives :**

1. To understand and apply the fundamental concepts in graph theory.
2. To apply graph theory based tools in solving practical problems.
3. To improve the proof writing skills.
4. To understand fundamentals of graph theory.
5. To explore modern applications of graph theory.

**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 Binary Trees.

**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 – Circuit Matrix – Path Matrix – Adjacency Matrix–Chromatic Number – Chromatic partitioning – Chromatic polynomial – Matching –Covering – Four Color Problem – Directed Graphs – Types of Directed Graphs –Digraphs and Binary Relations – 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 Education 2003.

**Course outcomes :**

1. The students will be able to apply principles and concepts of graph theory in practical situations.
2. Solve problems using basic graph theory.
3. Identify induced subgraphs, cliques, matchings, covers ingraphs.
4. Determine whether graphs are Hamiltonian and/or Eulerian.
5. Solve problems involving vertex and edge connectivity, planarityand crossing numbers,Solve problems involving vertex and edge coloring,Model real world problems using graph theory.

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

## (AJ5455) MICRO PROCESSORS AND INTEFACING LAB

**B.Tech.-III Yr I Sem: CSE**

| L | T | P | C |
|---|---|---|---|
| 0 | 0 | 2 | 1 |

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

1. Write and execute an Assembly language Program (ALP) to 8086 processor to add, subtract and multiplication.
2. Write and execute an Assembly language Program (ALP) to 8086 processor to divide a 32 bit unsigned Number.
3. Write and execute an Assembly language Program (ALP) to 8086 processor to sort the given array of Numbers.
4. Write and execute an Assembly language Program (ALP) to 8086 processor to Bit level Logical Operations, Rotate, Shift, Swap and Branch Operations.
5. Write and execute an Assembly language Program (ALP) to 8086 processor to pick the median from the given String.
6. Write and execute an Assembly language Program (ALP) to 8086 processor to find the length of a given string.
7. Write and execute an Assembly language Program (ALP) to 8086 processor to reverse the given string.
8. Write and execute an Assembly language Program (ALP) to 8086 processor to verify the password.
9. Write and execute an Assembly language Program (ALP) to 8086 processor to insert or delete a character?
10. Write and execute an Assembly language Program (ALP) to 8086 processor to call a delay subroutine and display the character on the LED display.
11. Interface a keypad to 8086 microprocessor and display the key number pressed on the 7- segment display which is also interfaced to 8086.
12. Write an interrupt service routine to 8086 whenever there is an interrupt request on interrupt pin, which displays “hello” on a LCD.
13. Interface an 8086 microprocessor trainer kit to PC and establish a communication between them through RS 232.
14. Interface DMA controller to 8086 and transfer bulk data from memory to I/O device.
15. Interface a stepper motor to 8086 and operate it in clockwise and anti-clock wise by choosing variable step-size.

16. Interface an 8 bit ADC to 8086 and generate digital output and store it in memory for the given square/ ramp/ triangle wave form inputs.
17. Interface an ADC to 8086 and generate step, ramp, triangle and square waveforms with different periods.
18. Time delay Generation Using Timers of 8051.
19. Serial Communication from / to 8051 to / from I/O devices.
20. Program Using Interrupts to Generate Square Wave 10 KHZ Frequency on P2.1 Using Timer0 8051 in 8bit Auto reload Mode and Connect a 1HZ Pulse to INT1 pin and Display on Port0.Assume Crystal Frequency as 11.0592MHZ.

**BOOKS :**

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

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

## (J5525) DATABASE MANAGEMENT SYSTEMS LABORATORY

**B.Tech III Year I-SEM: CSE** **L T P C**

**0 0 4 2**

**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 as follows.
2. The student is expected to practice the designing, developing and querying a database in the context of example database "Roadway travels". 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 by normalization.

**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 and Ticketing.
- 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 process of computerization of Roadway Travels you have to design and develop 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 the database.

The above process involves many steps like

1. Analyzing the problem and identifying the Entities and Relationships
2. E-R Model
3. Relational Model

4. Normalization
5. Creating the database
6. Querying.

Students are supposed to work on these steps week wise and finally create a complete "Database System" to Roadway Travels. Examples are given at every experiment for guidance to students.

**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 (Ticket Entity)
2. Passport ID (Passenger Entity)
3. Bus_NO (Bus Entity)

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**

Relate the entities appropriately. Apply cardinalities for each relationship. Identify strong entities and weak entities (if any). Indicate the type of relationships (total / partial). Try to incorporate generalization, aggregation, specialization etc wherever required.

Note: The student is required to submit a document by drawing the E-R Diagram to the lab teacher.

**WEEK 3: Relational Model**

Represent all entities (Strong, Weak) in tabular fashion. Represent relationships 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

passenger tables look as below. This is an example. You can add more attributes based on E-R model. This is not a normalized table.

**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. For example, when multiple instances of a given piece of information 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. A table that is sufficiently normalized is less vulnerable to problems of this kind, because its structure reflects the basic assumptions for when multiple 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 of passenger.

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 create tables,altering the database, dropping tables and databases if not

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 a database.
- INSERT - insert data into a table.
- UPDATE - updates existing data within a table.
- DELETE - deletes all records from a table, the space for the records remain.

**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 the passengers.

4. Find the ticket numbers of the passenger whose name start with and ends with 'h'.
5. Find the names of passengers, whose age is between 30 and 45,
6. Display all the passengers' names beginning with 'A'
7. Display the sorted list of passenger's names

**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 cancellation tables.

   Hint: Use UNION Operator.
2. Display the number of days in a week on which the 9W01 bus is available.
3. Find number of tickets booked for each PNR_no using GROUP BY CLAUSE. Hint: Use GROUP BY on PNR No.
4. Find the distinct PNR numbers that are present.
5. Find the number of tickets booked by a passenger where the number of seats is greater than
1. Hint: Use GROUP BY, WHERE and HAVING CLAUSES.
6. Find the total number of cancelled seats.

**WEEK 10: Triggers**
In this week you are going to work on Triggers. Creation of insert trigger, delete trigger, update trigger. Practice triggers using the above database.
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 procedure and modification of procedure. Practice procedures using the above database.

Eg: CREATE PROCEDURE myProc ()

BEGIN

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

End;

**WEEK 12: Cursors**

In this week you need to do the following: Declare a cursor that defines a result set.Open the cursor to establish the result set. Fetch the data into local variables 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 stdId,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, Pearson education.
2. Oracle PL/SQL, B.Rosenzweig and E.Silvestrova, Pearson education
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, Pearson Education.

**Course Outcomes :**

1. Ability to design and implement a database schema for given problem.
2. Be capable to Design and build a UI application.
3. Apply the normalization techniques for development of application software to realistic problems.
4. Ability to formulate queries using SQL DML/DDL/DCL commands.
5. Ability to design cursors and procedures.

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

## (J5526) WEB PROGRAMMING LAB

**B.Tech. III Year I-SEM: CSE**

| L | T | P | C |
|---|---|---|---|
| 0 | 0 | 4 | 2 |

**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 JSP concepts.
4. Understanding the basics of PHP.
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 respective links.

**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 messages if the above validations do not hold, navigate to next page when the input fields are valid.

**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

Assume four users user1, user2, user3 and user4 having the passwords pwd1, pwd2, pwd3 and pwd4 respectively. Write a servlet for doing the following. If he 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 required field validations to validate that all input fields are required and display error messages if the above validations do not hold.

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**

Create tables in the database which contain the details of items of each category. 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 using PHP.

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. Implement a web page in JSP, accessing the data from different database.
4. Implement a web page in PHP scripting.
5. To retrieve the data using MySQL and other different types of databases.

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

## (JMC03)CONSTITUTION OF INDIA

| L | P | C |
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| 3 | - | 3 |

**Course Objectives :**

1. The Constitution is the basic and fundamental law.
2. To introduce concepts and salient features of the constitution Indian.
3. Analyze the Preamble of the Constitution and identify the core values reflected in it;
4. Appreciate the core constitutional values that permeate the salient features of the.
5. Indian Constitution; and examine the nature of the Indian federal system and the parliamentary form of govern.

**Course outcome :**

1. It also tells us about the rights and also the duties of its citizens.
2. They know about the role, powers of members of local sabha and raj sabha.
3. It lays down the rules to govern the country.
4. Role and function of election commissioner.
5. Power and duties of elected represented s for panchayatraj , ZP, corporation and Importance of democracy.

**Unit I**

Introduction to Constitution' meaning of the term,, Indian Constitution: Sources and constitutional history, Features: Citizenship, Preamble, Fundamental Rights and Duties, Directive Principles of State Policy.

**Unit II**

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

**Unit III**

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

**Unit IV**

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

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

**Unit V**

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

**REFERENCES :**

1. Books. Recommended.
2. Indian Polity' by Laxmikanth.
3. Indian Administration' by Subhash Kashyap.
4. 'Indian Constitution' by D.D. Basu.
5. 'Indian Administration' by Avasti and Avasti.

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

## (J6527) COMPILER DESIGN

**B.Tech. III Year II-SEM CSE** **L T P C**
**2 1 0 3**

**Course Objectives :**

1. To learn the various phases of compiler.
2. To learn the various parsing techniques.
3. To understand intermediate code generation and run-time environment.
4. To learn to implement front-end of the compiler.
5. To learn to implement code generator.

**Syllabus :**

**UNIT – I**

**Overview of Compilation:** Phases of Compilation – Lexical Analysis, Regular Grammar and regular expression for common programming language features, pass and Phases of translation, interpretation, bootstrapping, data structures in compilation – LEX lexical analyzer generator.

**Top down Parsing:** Context free grammars, Top down parsing – Backtracking, LL (1), recursive descent parsing, Predictive parsing, Preprocessing steps required for predictive parsing.

**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 structures languages, 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 and records.

**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, redundant sub expression elimination, Induction variable elements, Live variable analysis, Copy propagation.

**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; Pearson Education.
2. Modern Compiler Implementation in C- Andrew N. Appel, Cambridge University Press.

**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, Wiley dreamtech.
3. Engineering a Compiler-Cooper & Linda, Elsevier.
4. Compiler Construction, Louden, Thomson.

**Course Outcomes :**

1. Understand the different phases of compiler.
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-time environment.
5. Learn to implement code optimization techniques and a simple code generator. Design and implement a scanner and a parser using LEX and YACC tools.

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

## (J6528) COMPUTER NETWORKS

**B.Tech. III Year II-SEM CSE** **L T P C**

**B. Tech. IV Year I Sem ECE** **2 1 0 3**

**Course Objectives :**

This course will develop students' knowledge in/on**.**

1. Computer network architecture and reference model.
2. Different types of data link and medium access control protocols.
3. Developing routing algorithms and internetworking.
4. Network protocols for real time applications.5.Protocols used in Transport and Application layers.

**Syllabus :**

**UNIT - I**

**Overview of the Internet:** Protocol, Layering Scenario, TCP/IP Protocol Suite: The OSI Model, Internet history standards and administration; Comparison of the OSI and TCP/IP reference model.

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

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

**UNIT - II**

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

**UNIT - III**

**Network Layer:** Network Layer Design issues, store and forward packet switching connection less and connection oriented networks-routing algorithms-optimality principle, shortest path, flooding, Distance Vector Routing, Control to Infinity Problem, Hierarchical Routing, Congestion control algorithms, admission control.

**UNIT - IV**

**Internetworking:** Tunneling, Internetwork Routing, Packet fragmentation, IPv4, IPv6 Protocol, IP addresses, CIDR, IMCP, ARP, RARP, DHCP.

**Transport Layer:** Services provided to the upper layers elements of transport protocol-addressing connection establishment, connection release, Connection Release, Crash Recovery.

**UNIT - V**

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

**Application Layer-** Introduction, providing services, Applications layer paradigms, Client server model, Standard client-server application-HTTP, FTP, electronic mail, TELNET, DNS, SSH.

**Text Books :**

1. Data Communications and Networking - Behrouz A. Forouzan, Fifth Edition TMH, 2013.
2. Computer Networks - Andrew S Tanenbaum, 4th Edition, Pearson Education.

**References Books :**

1. An Engineering Approach to Computer Networks - S. Keshav, 2nd Edition, Pearson Education.
2. Understanding communications and Networks, 3rd Edition, W. A. Shay, Cengage Learning.
3. Introduction to Computer Networks and Cyber Security, Chwan-Hwa (John) Wu, J. David Irwin, CRC Press.
4. Computer Networks, L. L. Peterson and B. S. Davie, 4th edition, ELSEVIER.
5. Computer Networking: A Top-Down Approach Featuring the Internet, James F. Kurose, K. W. Ross, 3rd Edition, Pearson Education.

**Course Outcomes :**

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

1. Demonstrate computer network architecture, OSI and TCP/IP reference models.
2. Determine types of data link and medium access control protocols.
3. Use Routing algorithms and internetworking.
4. Design network protocols for real time application.
5. Understand internals of main protocols such as HTTP, FTP, SMTP, TCP, UDP, IP.

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

## (J6529) MACHINE LEARNING
**(Professional Elective –II)**

**B.Tech. III Year II-SEM CSE** **L T P C**

**2 1 0 3**

**Course Objectives :**

To understand the concepts of machine learning..

1. To appreciate supervised and unsupervised learning and their applications.
2. To understand the theoretical and practical aspects of Probabilistic Graphical Models.
3. To appreciate the concepts and algorithms of reinforcement learning.
4. To learn aspects of computational learning theory.
5. To design appropriate machine learning algorithms for problem solving.

**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 – Naïve Bayes - Discriminant Functions -Probabilistic Generative Models -Probabilistic Discriminative Models - Bayesian Logistic Regression. Decision Trees - Classification Trees- egression Trees - Pruning. Neural Networks -Feed-forward Network Functions - Back- propagation. Support vector machines - Ensemble methods- Bagging- Boosting.

**UNIT III**

**UNSUPERVISED LEARNING:**Clustering- K-means - EM Algorithm- Mixtures of Gaussians. The Curse of Dimensionality - Dimensionality Reduction - Factor analysis - Principal Component Analysis - Probabilistic PCAIndependent components analysis.

**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 Veriag 2001.

**Reference Books :**

- Christopher Bishop, “Pattern Recognition and Machine Learning” 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 your choice.
2. Implement probabilistic discriminative and generative algorithms for an application of your choice and analyze the results.
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 of application.
5. Identify applications suitable for different types of machine learning with suitable justification.

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

## (J6530) OBJECT ORIENTED ANALYSIS AND DESIGN
**(Professional Elective-II)**

**B.Tech. III Year II-SEM CSE**

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**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, and composition.
2. Describe the activities in the different phases of the object-oriented development life cycle. Model a real-world application by using a UML class diagram.
3. Provide a snapshot of the detailed state of a system at a point in time using a UML (Unified Modeling Language) object diagram.
4. Recognise when to use generalisation, aggregation, and composition relationships.
5. Specify different types of business rules in a class diagram.

**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, Types and Roles, Packages. Class & Object Diagrams: Terms, concepts, modelling techniques for Class & Object Diagrams.

**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 2nd Edition.

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 Pearson Education.
2. Pascal Rogues: Modeling Software Systems Using UML2, WILEY-Dreamtech India Pvt. Ltd.
3. Atul Kahate: Object Oriented Analysis & Design, The McG raw Hills Companies.
4. Mark Priestley: Practical Object-Oriented Design with UML, TMH.
5. Appling UML and Patterns: An introduction to Object — Oriented.
6. Analysis and Design and Unified Process, Craig Larman, Pearson Education.

**Course Outcomes :**

1. Graduate can able to take up the case studies and model in it.
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 Library application.
3. Ability to analyze and model software specifications.
4. Ability to abstract object-based views for generic software systems.
5. Ability to deliver robust software components.

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

## (J6531) ADVANCED DATABASES
**(Professional Elective –II)**

**B.Tech. III Year II-SEM CSE** **L T P C**
**2 1 0 3**

**Course Objectives :**

This course will develop student's knowledge in/on.

1. Data on external storage and file organizations.
2. The features of object database systems.
3. The architectures of distributed databases.
4. The deductive databases using Recursive Queries.
5. This module looks at the technologies, data models and policies that such systems require.

**Syllabus :**

**UNIT-I**

**Overview of Storage and Indexing:** Data on external storage, file organizations and indexing, index data structures, comparison of file organizations, indexes and performance tuning.

**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.

**Distributed Database Design:** Alternative design strategies, distribution design issues, fragmentation, and allocation.

**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 query evaluation, parallelizing individual operations, parallel query optimization.

**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 involving spatial data, introduction to spatial indexes, indexing based on space-filling curves, Grid files, R Trees: Point and region data, issues on high dimensional indexing.

**Text Book :**

Raghu Ramakrishnan and Johannes Gehrke, "Database Management Systems ", 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 Performance tuning.
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. Gain the knowledge in space filling curves with indexing techniques.
5. Design & Implement Advanced Database Systems.

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

## (J6533) DISTRIBUTED COMPUTING
**(Professional Elective –III)**

**B.Tech. III Year II-SEM CSE** **L T P C**

**3 0 0 3**

**Course Objectives :**

1. Present the principles underlying the function of distributed computing.
2. Create an awareness of distributed computing design and implementation.
3. Describe and distinguish synchronization and concurrency control in distributed computing system.
4. Understanding distributed transaction and control of distributed deadlocks.
5. Understanding distributed computing in cloud and grid computing.

**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.
Operating System Support: Introduction, The operating system layer, 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. Coordination and Agreement: distributed mutual exclusion, Election, Multicast communication, Consensus and related problems.

**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, " Distributed Systems concepts and Design", 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, Chapman and Hall/CRC ,"Distributed Systems" , 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 distributed computing.
2. Understand key mechanisms of remote execution.
3. Get familiar with synchronization of processes in distributed environment.
4. Acquire the knowledge of distributed transaction, concurrency and deadlock.
5. Acquire the knowledge of working of grid and cloud computing.

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

## (J6534) HIGH PERFORMANCE COMPUTING
**(Professional Elective –III)**

**B.Tech. III Year II-SEM CSE**

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**Course Objectives :**

1. Analyze parallel programs and message passing paradigms.
2. Identifying the issues involved in Parallel Computing.
3. Programming shared address space platforms.
4. Open MP and Dense matrix algorithms.
5. GPU programming and heterogeneous computing with Open CL and analyze parallel programs and message passing paradigms.

**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-processor mapping 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 on performance, scalability of parallel systems, minimum execution time and

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, POSIX thread API, creation and termination of thread, Synchronization primitives, controlling thread and synchronization attributes, thread cancellation, 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 with examples**.**

**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 CUDA C.

**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 General Purpose GPU Programming”, First Edition, Addison Wesley, ISBN-13: 978-0131387683, 2010. (Chapters: 1-4).

**Reference Books :**

1. Benedict R Gaster, Lee Howes, David R Kaeli Perhaad Mistry Dana Schaa, “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 computer systems.
2. Optimize the performance of a parallel program to suit a particular hardware and software environment.
3. Write Programs using accelerator technologies of GPUs with CUDA, OpenC.
4. Design algorithms suited for Multi-core processor systems using OpenCL, OpenMP, threading techniques.
5. Have an awareness of the modern field of computational science and engineering and of the impact of high performance computing on science and industry.

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

## (J6535) SOFTWARE ENGINEERING
**(Professional Elective –III)**

**B.Tech. III Year II-SEM CSE**

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|---|---|---|---|
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**Course Objectives :**

1. To understand the software life cycle system and the different software architectural views.
2. To understand the software requirement engineering and SRS document.
3. A general understanding of software process models.
4. To aware of Software Engineering methods and practices, and their appropriate application.
5. To understand the V and V techniques, design of software product.

**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 process framework, The Capability Maturity Model Integration (CMMI), Process patterns, process assessment, personal and team process models.

**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 analysis and design, interface analysis, interface design steps, Design evaluation.

**UNIT - IV**

**Testing Strategies:** A strategic approach to software testing, test strategies for conventional software, Black-Box and White-Box testing, Validation testing, System testing, the art of Debugging.

**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**

**Risk Management:** Reactive vs. Proactive Risk strategies, software risks, Risk identification, Risk projection, Risk refinement, RMMM, RMMM Plan.

**Quality Management :** Quality concepts, Software quality assurance, Software Reviews, Formal technical reviews, Statistical Software quality Assurance, Software reliability, The ISO 9000 quality standards.

**Text Books :**

1. Software engineering A practitioner's Approach, Roger S Pressman, 6th edition. McGrawHill International Edition.
2. Software Engineering, Ian Sommerville, 7th edition, Pearson education.

**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 University Press.
5. Software Engineering1: Abstraction and modelling, Diner Bjorner, Springer International edition, 2006.
6. Software Engineering2: Specification of systems and languages, Diner Bjorner, Springer International edition 2006.
7. Software Engineering Foundations, Yingux Wang, Auerbach Publications, 2008.
8. Software Engineering Principles and Practice, Hans Van Vliet, 3rd edition, John Wiley & Sons Ltd.

**Course outcomes :**

The student will be able to

1. Apply the functional and non-functional requirements to model an effective software product.
2. Analyze, design and implement an object oriented approach system.
3. Enhance the testing tools for effective debugging.
4. Analyze the metrics, risk and the quality issues for designing a process/ product.

5 Test security levels of a software and mange security software's.

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

## (J6536) COMPILER DESIGN AND COMPUTER NETWORKS LAB

**B.Tech. III Year II-SEM CSE** **L T P C**
**0 0 4 2**

**Course Objectives :**

1. To provide an understanding of the language translation peculiarities by designing a complete translator for a mini language.
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 executable code.
4. Introduce the student to advanced networking concepts, preparing the student for entry Advanced courses in computer networking.
5. Allow the student to gain expertise in some specific areas of networking such as the design and maintenance of individual networks.

**Recomended System / Software Requirements :**

- Intel based desktop PC with minimum of 166 MHZ or faster processor with atleast 64 MB RAM and 100 MB free disk space.
- C++ compiler.

**LIST OF EXPERIMENTS :**

Consider the following mini Language, a simple procedural high-level language, 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 BNF grammar:

<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 and newlines.
2. LEX to count the number of characters, words, spaces and lines in a given input file Program using.
3. Program using LEX to recognize and count the number of identifiers in a given input file.
4. Implement the lexical analyzer using JLex, flex or lex or other lexical analyzer generarting tools.
5. Design Predictive parser for the given language.
6. Design LALR bottom up parser for the above language.
7. Convert the BNF rules into Yacc from and write code to generate abstract syntax tree.
8. Write program to generate machine code from the abstract syntax tree generated by the parser.

**COMPUTER NETWORKS LAB :**

1. Implement Bit-Stuffing in C language.
2. Implement Character-Stuffing in C language.
3. Write a C program for Cyclic Redundancy check (CRC) at sender side and receiver side.
4. Implement Dijkstra's algorithm to compute the shortest path to a graph
5. Implement the Routing table to graph using Distance Vector Routing algorithm.
6. Implement the DES algorithm.
7. Implement the RSA algorithm.

**Course outcomes :**

1. Identify the different types of network topologies and protocols.
2. Identify the different types of network devices and their functions within a network.
3. Implement DES and RSA algorithms.
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 BNF grammar.

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

## (J6537) OBJECT ORIENTED ANALYSIS AND DESIGN LAB

**B.Tech. III Year II-SEM CSE** **L T P C**
**0 0 4 2**

**Course Objectives :**
The course will develop student's knowledge in/on…

1. Use case documents that capture requirements for a software system.
2. Class diagrams that model both the domain model and design model of a software system.
3. Transforming a designed model into code through a mapping to an implementation language.
4. Functions of each object-oriented analysis and design model using the UML case tools.
5. Applying Unified modeling to real world applications.

**LIST OF EXPERIMENTS :**

**Experiment-I:**
Design Forward Engineer Class diagrams for the following.

a. File System
b. Spread Sheet
c. Window Manager
d. School Information System

**Experiment-II:**

Design Reverse Engineering for the following Class specifications

a. Class student with attributes name, roll_no and operation study ()
b. Relationship Aggregation
c. Relationship Generalization
d. Interface.

**Experiment-III:**

Construct Use case Diagrams for the following.

a. Diagram Editor
b. Library Information System
c. Banking System
d. Cab Dispatching System.

**Experiment-IV:**
Construct Sequence Diagrams for the following.

a. Mobile Phone
b. Use case student register for a course

c. Diagram Editor.

**Experiment-V:**

Construct Collaboration Diagrams for the following.

a. Use case Librarian issues books to student.
b. Mobile Phone
c. Diagram Editor.

**Experiment-VI:**

Construct Activity Diagrams for the following.

a. ATM Transaction
b. Ticket Machine
c. Sales Order Processing.

**Experiment-VII:**

Construct State Chart Diagrams for the following.

a. Account
b. CD Player
c. ATM machine.

**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. Eexplain basic object oriented concepts such as types, inheritance & interfaces.
2. Implement Forward and Reverse Engineering Techniques.
3. Eexplain the facets of the Unified Process approach to designing and building software system.
4. Develop object oriented designs of software suing Unified Modeling Language.
5. Develop UML models for real world applications.

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

## (J7538) DATA MINING

**B.Tech. IV Year I-SEM CSE**

| L | T | P | C |
|---|---|---|---|
| 3 | 0 | 0 | 3 |

**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, predictive modeling, and identifying new trends and behaviors.
2. Building basic terminology.
3. Learn how to gather and analyze large sets of data to gain useful business understanding.
4. Learn how to produce a quantitative analysis report/memo with the necessary information to make decisions.
5. Describing and demonstrating basic data mining algorithms, methods, and tools.

**Syllabus :**

**UNIT I**

Introduction: Fundamentals of data mining, Data Mining Functionalities, Classification of Data Mining Systems, Data Mining Task Primitives, Integration of a Data Mining System with a Database or a Data Warehouse System, Issues in Data Mining. Data Preprocessing: Need for Preprocessing the Data, Data Cleaning, Data Integration and Transformation, Data Reduction, Discretization and Concept Hierarchy Generation.

**UNIT II**

Data Warehouse and OLAP Technology for Data Mining: Data Warehouse, Multidimensional Data Model, Data Warehouse Architecture, Data Warehouse Implementation, Usage of Data Warehousing Online Analytical Processing and Mining Data Cube Computation: Efficient Methods for simple Data Cube Computation (Full Cube, Iceberg Cube, Closed Cube and Shell Cube), Discovery Driven exploration of data cubes, Attribute-Oriented Induction for data characterization and its implementation.

**UNIT III**

Mining Frequent Patterns, Associations and Correlations: Basic Concepts, 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, Correlation Analysis.

**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, Classification by Back propagation Prediction, linear and non-linear regression, 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” , 3rd edition, Morgan Kaufmann Publishers, 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 Edn Asia.
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”, Pearson education.
6. Arun K Pujari “Data Mining Techniques”, 2nd edition, Universities Press.

**Course Outcomes :**

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

1. Understand operational database, warehousing and multidimensional need of data base to meet industrial needs.
2. Apply the association rules for mining the data.
3. Design and deploy appropriate classification techniques.
4. Cluster the high dimensional data for better organization of the data.
5. Compare and contrast the dominant data mining algorithms.

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

## (J7542) NETWORK PROGRAMMING
**(Professional Elective-IV)**

**B.Tech. IV Year I-SEM CSE** **L T P C**
**2 1 0 3**

**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 system calls.
3. To understand how to use TCP and UDP based sockets.
4. To organize and manipulate files and directories.
5. To explain inter process communication consisting of pipes, FIFOs, Semaphores and message Queues.

**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 manipulation function and related functions .Elementary TCP sockets – Socket, connect, bind, listen, accept, fork and exec function, concurrent servers. Close function and related function.

**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/O Multiplexing and socket options:** I/O Models, select function, Batch input, shutdown function, TCP Echo server, getsockopt and setsockopt functions. Socket states, Generic socket option IPV6 socket option, ICMPV6 socket option, IPV6 socket option and TCP socket options.

**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, File and record locking, Pipes, FIFOs streams and messages, 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, King abls, Pearson Education.
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 be solved.
2. Create conceptual solutions to those issues and implement a programming solution.
3. Apply several common programming interfaces to network communication.
4. Understand the use of TCP/UDP Sockets.
5. Apply advanced programming techniques such as Broadcasting, Multicasting.

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

## (J7543) SECURE SOFTWARE ENGINEERING
**(Professional Elective-IV)**

**B.Tech. IV Year I-SEM CSE**

| L | T | P | C |
|---|---|---|---|
| 2 | 1 | 0 | 3 |

**Course Objectives :**

This course will develop students' knowledge in/on …

1. Specification and design of secure software.
2. Secure software engineering practices.
3. Testing security levels of an software.
4. Secure Systems assembling challenges.
5. Managing secure software's.

**Syllabus:**

**UNIT-I**

**Software Security Issues:** introduction, the problem, Software Assurance and Software Security, Threats to software security, Sources of software insecurity, Benefits of Detecting Software Security.

**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 enterprise software security framework, deciding how much security is enough, Security and project management, Maturity of Practices.

**Text Books :**

Julia H. Allen, Nancy R. Mead, Sean J. Barnum, Robert J. 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. Richard Sinn, "Software Security ", Cengage Learning, First Edition, ISBN: 142831945X,2008.

**Course Outcomes :**

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

1. Explain the specification and design of secure software.
2. Adopt secure software practices for application development.
3. Test security levels of an software.
4. Identify Secure Systems assembling challenges.
5. Mange security software's.

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

## (J7544) PATTERN RECOGNITION
**(Professional Elective-IV)**

**B.Tech. IV Year I-SEM CSE** **L T P C**

**2 1 0 3**

**Course Objectives** :

1. To introduce the students about fundamentals of image formation.
2. To introduce students the major ideas, methods, and techniques of computer vision and pattern recognition.
3. To develop an appreciation for various issues in the design of computer vision and object recognition systems.
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**

**Classifiers Based on Bayes Decision Theory:** Introduction , Bayes Decision Theory, Discriminant Functions and Decision Surfaces , Bayesian Classification for Normal Distributions.

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**

**Non Linear Classifiers:** The XOR Problem, The Two-Layer Perceptron , Three Layer Perceptrons.

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-Dimensional Space in Linear Dichotomies, Polynomial Classifiers, Radial Basis Function Networks, Universal Approximators.

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 , Neural Networks and Feature Generation / Selection, The Bayesian Information Criterion.

**Feature Generation:** Linear Transforms Regional Features, Features for Shape and Size Characterization, Typical Features for Speech and Audio Classification.

**UNIT-V**

**Template Matching:** Introduction, Similarity Measures Based on Optimal Path Searching Techniques, Measures Based on Correlations, Deformable Template 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. C Bishop ," Pattern Recognition and Machine Learning" ,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 image formation.
2. Comprehend the major ideas, methods and techniques of image processing and computer vision.
3. Understand typical pattern recognition techniques for object recognition.
4. Implement the basic image processing and computer vision techniques.
5. Develop simple object recognition systems and pattern classifiers.

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

**(J7545) MOBILE COMPUTING**
**(Professional Elective-V)**

**B.Tech. IV Year I-SEM CSE**

| L | T | P | C |
|---|---|---|---|
| 2 | 1 | 0 | 3 |

**Course Objectives :**

1. Understand and identify the GSM, GPRS and Bluetooth software model for mobile computing.
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 wireless networks.
3. Understand and identify business data management and security issues over slow wireless media.
4. Understand, analyze and explain working of software mobile agents over long distances, transaction processing over wire and wireless media.
5. Understand CDMA, communication protocols and QoS over wire and wireless channels.

**Syllabus :**

**UNIT I**

**Introduction:** History of wireless communication, Applications, Wireless transmission. Frequencies for radio transmission, Regulations, Signals, Antennas, Signal propagation, Multiplexing, Spread spectrum, Cellular Systems

**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 University press.

**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-interface modalities.
2. Understand and learn frequency band, spectrum, air interface and channel structure.
3. Understand the necessary knowledge of cellular communication, infrastructure-less networks.
4. Analyze TCP, MAC protocols and their technical feasibility.
5. Understand and implement the hardware components/architectures/ databases/operating system of mobile networks that is necessary to built self confidence to develop novel products and solutions for real world.

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

## (J7547) CLOUD COMPUTING
**(Professional Elective-V)**

**B.Tech. IV Year I-SEM CSE**

| L | T | P | C |
|---|---|---|---|
| 2 | 1 | 0 | 3 |

**Course Objectives :**

1. To impart the fundamentals and essentials of Cloud Computing.
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 computing environments.
4. To enable students explore cloud computing driven commercial systems such as Google App Engine, Microsoft Azure and Amazon Web Services and others.
5. To Provide Knowledge about Cloud Programming,Software Environments and basic standards in cloud computing.

**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 of Virtualization, Virtualization Structures//Tools and Mechanisms, Virtualization of CPU, Memory and I/O Devices, Virtual Clusters and Resource Management, Virtualization Data-Center Automation.

**Case studies:** Xen Virtual machine monitors- Xen API. VMware - VMware products-Vmware Features. Microsoft Virtual Server - Features of Microsoft Virtual Server.

**UNIT III**

**Cloud computing architectures over Virtualized Data Centers:** Data-Center design and Interconnection networks, Architectural Design of Compute and Storage Clouds, Public Cloud Platforms, GAE, AWS, Azure, Inter-cloud Resource Management.

**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 Grid Platforms, parallel and distributed Programming Paradigms, Programming Support of Google App Engine, Programming on Amazon AWS and Microsoft Azure, Emerging Cloud Software Environments.

**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 Press 2009.
2. Kai Hwang. Geoffrey C.Fox, Jack J. Dongarra, "Distributed and Cloud Computing From Parallel Processing to the Internet of Things", 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"23rd ACM Symposium on Operating Systems Principles (SOSP 2011), Cascais, Portugal October 2011.
2. A Fully Homomorhic Encryption Scheme, Craig Gentry, September 2009.
3. David Marshall, Wade A. Reynolds, "Advanced Server Virtualization: VMware and Microsoft Platform in the Virtual Data Center", Auerbach Publications, 2006.
4. Web resources:

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 various applications.
2. Describe the of various services offered in cloud computing.
3. Summarize the knowledge of underlying technologies used in cloud computing.
4. Identify the security related issues involved in cloud computing.
5. Identify the common standards in cloud computing.

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

## (J7548) SOFTWARE TESTING METHODOLOGIES
**(Professional Elective-V)**

**B.Tech. IV Year I-SEM CSE**

| L | T | P | C |
|---|---|---|---|
| 2 | 1 | 0 | 3 |

**Course Objectives :**

1. To study fundamental concepts in software testing, including software testing objectives, process, criteria, strategies, and methods.
2. To learn how to planning a test project, design test cases and data, conduct testing operations, manage software problems and defects, generate a testing report.
3. To expose the advanced software testing topics, such as object-oriented software testing methods, and component-based software testing issues, challenges, and solutions.
4. To gain software testing experience by applying software testing knowledge and methods to practice-oriented software testing projects.
5. To understand software test automation problems and solutions.

**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.

**Logic Based Testing: -** overview, decision tables, path expressions, kv charts, specifications.

**UNIT-V**

**State, State Graphs and Transition testing: -** state graphs, good & bad state 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 or Win-runner).

**Text Books :**

1. Software Testing techniques – Baris Beizer, Dreamtech, second edition.
2. Software Testing Tools – Dr.K.V.K.K.Prasad, Dreamtech.

**Reference Books :**

1. The craft of software testing – Brian Marick, Pearson Education.
2. Software Testing Techniques – SPD(Oreille).
3. Software Testing in the Real World – Edward Kit, Pearson.
4. Effective methods of Software Testing, Perry, John Wiley.
5. Art of Software Testing – Meyers, John Wiley.

**Course Outcomes :**

By the end of the course, the student should :

1. Have an ability to apply software testing knowledge and engineering methods.
2. Have an ability to design and conduct a software test process for a software testing project.
3. Have an ability to identify the needs of software test automation, and define and develop a test tool to support test automation.
4. Have an ability to understand various software testing problems.
5. Have an ability to identify and solve these problems by designing and selecting software test models, criteria, strategies, and methods.

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

## (J7549) DATA MINING LAB

**B.Tech. IV Year I-SEM CSE** **L T P C**
**0 0 4 2**

**Course Objectives :**
1. Practical exposure on implementation of well known data mining tasks.
2. Exposure to real life data sets for analysis and prediction.
3. Learning performance evaluation of data mining algorithms in a supervised and an unsupervised setting.
4. Handling a small data mining project for a given practical domain.
5. At the end to compare and contrast different conceptions of data mining.

**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. Introduction to Data Mining Pang-Ning Tan, Michael Steinbach, Vipin Kumar 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-processingand integration.
2. The principle algorithms and techniques used in data mining, such as clustering, association mining, classification and prediction.
3. To evaluate the different models of OLAP and data preprocessing.
4. To enlist various algorithms used in information analysis of Data Mining Techniques.
5. To demonstrate the knowledge retrieved through solving problems.

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

## (J7550) NETWORK PROGRAMMING LABORATORY

**B.Tech. IV Year I-SEM CSE** **L T P C**
**0 0 4 2**

**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 Socket API.
4. To understand how to use TCP and UDP based sockets.
5. To implement RPC, application layer protocols.

**LIST OF EXPERIMENTS :**

**Week1:**
Implement the following forms of IPC.

a. Pipes
b. FIFO

**Week 2:**
Implement file transfer using Message Queue form of IPC.

**Week 3:**
Write a programme to create an integer variable using shared memory concept and increment the variable simultaneously by two processes. Use semaphores to avoid race conditions.

**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, BS Publication.

**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 networking systems.
4. Analyze Network traffic using monitoring tools.
5. Implement File transfer protocol, remote login using pseudo terminal and RPC.

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

## (J8559) SEMANTIC WEB AND SOCIAL NETWORKS
**(Professional Elective-VI)**

**B.Tech. IV Year II-SEM CSE** **L T P C**
**2 1 0 3**

**Course Objectives :**

1. To learn Web Intelligence.
2. To learn Knowledge Representation for the Semantic Web.
3. To learn Ontology Engineering.
4. To learn Semantic Web Applications, Services and Technology.
5. To learn Social Network Analysis and semantic web.

**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, Software Agents, BernersLee www, Semantic Road Map, Logic on the semantic 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 Web Language(OWL), UML, XML/XML Schema.

**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, Knowledge Base ,XML Based Web Services, Creating an OWL-S Ontology for Web Services, Semantic Search Technology, Web Search Agents and Semantic Methods.

**UNIT-V**

Social Network Analysis and semantic web,What is social Networks analysis, development of the social networks analysis, Electronic Sources for Network

Analysis Electronic Discussion networks, Blogs and Online Communities, 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. Demonstrate knowledge and be able to explain the three different "named" generations of the web.
2. Demonstrate the ability to anticipate materially in projects that develop programs relating to Web applications and the analysis of Web data.
3. Be able to understand and analyze key Web applications including search engines and social networking sites.
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 Wide Web.
5. Be able to analyze and explain how technical changes affect the social aspects of Web-based computing.

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

## (J8560) E-COMMERCE
**(Professional Elective-VI)**

**B.Tech. IV Year II-SEM CSE**

| L | T | P | C |
|---|---|---|---|
| 2 | 1 | 0 | 3 |

**Course Objectives :**

1. To develop an understanding of scope of E-Commerce.
2. To develop an understanding of electronic market and market place.
3. To develop an understanding of business models.
4. To develop an understanding of legal issues, threats of E-Commerce.
5. Identify and discuss management issues underlying e-Commerce issues including organizational structure, strategic planning, goal setting, corporate social responsibility, international arena, changing market intermediaries, resource allocation and customer service.

**Syllabus :**

**UNIT - I**

Electronic Commerce-Frame work, anatomy of E-Commerce applications, E-Commerce Consumer applications, E-Commerce organization applications.Consumer Oriented Electronic commerce Mercantile Process models.

**UNIT - II**

Electronic payment systems - Digital Token-Based, Smart Cards, Credit Cards, Risks in Electronic Payment systems.Inter Organizational Commerce - EDI, EDI Implementation, Value added networks.

**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 Resource Discovery - Information search and Retrieval, Commerce Catalogues, Information Filtering.

**UNIT - V**

Multimedia - key multimedia concepts, Digital Video and electronic Commerce, Desktop video processings, Desktop video conferencing.

**Text Book** :

Frontiers of electronic commerce – Kalakata, Whinston, Pearson.

**Reference Books :**

1. E-Commerce fundamentals and applications Hendry Chan, Raymond Lee, Tharam Dillon, Ellizabeth Chang, John Wiley.
2. E-Commerce, S.Jaiswal – Galgotia.
3. E-Commerce, Efrain Turbon, Jae Lee, David King, H.Michael Chang.

**Course Outcomes :**

1. Students would be able to analyze the concept of electronic market and market place.
2. Students would be able to understand the business models.
3. Students would be able to understand the business standards.
4. Explain basic Electronic Commerce functions.
5. Students would be able to understand the legal and security issues.

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

## (J8561) SOFTWARE PROJECT MANAGEMENT
**(Professional Elective-VI)**

**B.Tech. IV Year II-SEM CSE**

| L | T | P | C |
|---|---|---|---|
| 2 | 1 | 0 | 3 |

**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 handle these.
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 reduced effectively.
4. Will be able to do the Project Scheduling, tracking, Risk analysis, Quality management and Project Cost estimation using different techniques.
5. Develop the skills for tracking and controlling software deliverables.

**Syllabus :**

**UNIT- I**

**Conventional Software Management:** The waterfall model, conventional software Management performance. Evolution of Software Economics: Software Economics. Pragmatic software cost estimation.

**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**

**Life cycle phases**: Engineering and production stages, 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**

**Work Flows of the process**: Software process workflow, Inter trans workflows. 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, Pragmatic planning.

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, Management indicators, and quality indicators. life cycle expectations pragmatic Software Metrics, Metrics automation. Tailoring the Process: Process discriminates, Example. Future Software Project Management: Modem Project Profiles Next generation Software economics modem Process transitions.

**Case Study**: The Command Center Processing and Display System. Replacement (CCPDS. R).

**Text Books :**

1. Software Project Management. Walker Royce, Pearson Education.
2. Software Project Management, Bob Hughes & Mike Cotterell, fourth edition, Tate McGraw Hd.

**Reference Books :**

1. Applied Software Project Management, Andrew Stelbian 8 Jennifer Greene, 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 of project.
2. Compare and differentiate organization structures and project structures.
3. Implement a project to manage project schedule, expenses and resources with the application of suitable protect management tools.
4. Improve Problem Solving, Critical thinking, Communication and Interpersonal Skills.
5. Impart Ethical and Professional Responsibilities.

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