

**COURSE STRUCTURE  
AND  
DETAILED SYLLABUS**

**COMPUTER SCIENCE  
AND  
ENGINEERING**

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



**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES**

**(UGC-Autonomous)**  
Narsampet, Warangal – 506 332  
Telangana State, India

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NARSAMPET, WARANGAL – 506 332. T.S.

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**Academic Regulations-2015 of B.Tech (Regular) Programme under  
Choice Based Credit System (CBCS)**

*(Effective for the students admitted into I-Year from the Academic year 2015-2016)*

**1. Eligibility for Admission:**

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

**2. Branches of B.Tech Programme:**

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

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

**3. Credit Courses:**

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

	For I-Year-I/II Semester		II,III,IV Years per Semester	
	Periods/Week	Credits	Periods/Week	Credits
Lecture	04	04	04	04
	03	03	03	03
	02	02	02	02
Tutorial	02	01	02	01

Practical	03	02	03	02
Drawing	02T & 04D	04	03	02
Mini Project	-	-	-	04
Comprehensive Viva Voce	-	-	-	04
Seminar	-	-	02	04
Major Project	-	-	15	08

#### 4. Subject/Course Classification:

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

- i. Foundation Courses (FC) are further categorized as
  - a. BSH (Basic Sciences, Humanities and Social Sciences),
  - b. ES (Engineering Sciences).
- ii. Core Courses (CC) and Elective Courses (EC) are categorized as PS (Professional Subjects), which are further subdivided as
  - a. PC (Professional/Departmental Core) subjects,
  - b. PE (Professional/Departmental Elective)
  - c. OE (Open Electives)
  - d. PW (Project Work)
- iii. Minor Courses (1 or 2 Credit Courses, belonging to BSH/ES/PC as per relevance); and
- iv. Mandatory Courses (MC-non-credit oriented).

#### 4.1 Course Nomenclature:

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

S. No.	Broad Course Classification	Course Group/ Category	Course Description	Range of Credits
1.	Foundation Courses (FC)	BSH-Basic Sciences, Humanities and Social Sciences	Includes-Mathematics, Physics and Chemistry subjects and subjects related to Humanities, Social Sciences and Management	20%-30%
2.		ES-Engineering Sciences	Includes fundamental engineering subjects	15%-20%
3.	Core Courses (CC)	PC-Professional Core	Includes core subjects related to the parent Discipline/ Department / Branch of Engineering	35%-40%

4.	Elective Courses (EC)	PE-Professional Electives	Includes Elective subjects related to the Parent Discipline/ Department/Branch of Engineering	10%-15%
5.		OE-Open Electives	Elective subjects which include inter-disciplinary subjects or subjects in an area outside the parent Discipline/Department /Branch of Engineering	5%-20%
6.	Core Courses	PW-Project Work	B.Tech. Major Project Work	10%-15%
7.		Mini-Project	Industrial Oriented Training/ Internship /Mini-Project	
8.		Seminar	Seminar based on core contents related to parent Discipline/ Department/Branch of Engineering	
9.		Minor Courses	1 or 2 Credit Courses (Subset of BSH)	Included
10.		Mandatory Courses (MC)	Mandatory Courses (Non-Credit)	-
<b>Total Credits for B.Tech. Programme</b>				<b>192 (100%)</b>

#### 5. Course Registration:

- 5.1 Each student, on admission shall be assigned to a Faculty Advisor/Counselor who shall advise her/him about the academic programmes and counsel on the choice of courses in consideration with the academic background and student's career objectives.
- 5.2 Faculty advisor shall be only from the engineering departments. With the advice and consent of the Faculty Advisor the student shall register for a set of courses he/she plans to take up for each Semester.
- 5.3 The student should meet the criteria for prerequisites to become eligible to register for that course.
- 5.4 A student shall be permitted to register the prescribed credits per semester with a variation of  $\pm 4$  credits excluding Laboratories/Seminar/Project. However, registration for Repeat courses of previous semesters (Odd to Odd and Even to Even semesters) is allowed in excess of this limit. This is to encourage the average student to complete 1<sup>st</sup> year before going to 3<sup>rd</sup> year and/or complete 2<sup>nd</sup> year before going to 4<sup>th</sup> year.
- 5.5 If a student finds that he/she has registered for more courses than possible to study in a semester, he/she can drop one or more courses before the end of 3<sup>rd</sup> week of the semester.
- 5.6 A student is allowed to register for more than 192 credits in completion of B.Tech programme. However, additional credits scored shall not be considered for award of division and also not considered for calculation of Semester Grade Point Average (SGPA) and Cumulative Grade Point Average (CGPA). For such extra subject(s) registered a letter grade alone will be indicated in the Grade card as a performance measure.

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

- 6.1 Students shall have to register for the courses during the preparation and practical examinations of the previous semester. However for the first year, the students have to register for courses one week after the commencement of class work.
- 6.2 The maximum number of students to be registered in each course shall depend upon the physical facilities available.
- 6.3 The information on list of all the courses offered in every department specifying the credits, the prerequisites, a brief description of syllabus or list of topics and the time slot shall be made available to the student in time.
- 6.4 In any department, preference for registration shall be given to those students of that department for whom the course is a core course.
- 6.5 The registration for the inter departmental and/or open elective courses shall be on first come first served basis, provided the student fulfills prerequisites for that course, if any. The number of students to be registered shall be based on the class room and laboratory capacity. Every effort shall be made by the Department/Centre to accommodate as many students as possible.
- 6.6 More than one teacher may offer the same course in any semester.
- 6.7 No course shall be offered unless there is a minimum of 20 students or one third of the class strength specified.

## **7. Distribution and Weightage of Marks:**

- 7.1 The Performance of a student in each semester shall be evaluated subject-wise with a maximum of 100 marks for theory and 100 marks for practical subjects. In addition, Industry oriented mini-project, Seminar, Comprehensive Viva-Voce and Major Project Work shall be evaluated for 100, 100, 100 and 200 marks respectively.
- 7.2 For theory subjects the distribution shall be 30 marks for Internal Evaluation and 70 marks for the End-Examination.
- 7.3 For theory subjects, during the semester there shall be 2 mid-term examinations (internal exams) and two assignments carrying 5 marks each.
- 7.4 Each mid-term examination of 90 minutes consists of Part-A (objective type) for 10 marks and Part-B (subjective paper) for 15 marks. Mid-term examination paper shall contain 5 questions out of which the student has to answer 3 questions of each 5 marks. First mid-term examination shall be conducted for first 2.5 units (50%) of syllabus and second mid-term examination shall be conducted for remaining 2.5 units (50%) of syllabus. Objective type may be with multiple choice questions, true/false, match type questions, fill in the blanks etc,
- 7.5 First Assignment should be submitted before the conduct of the first mid-term examination and the second Assignment should be submitted before the conduct of the second mid-term examination. The assignments shall be as specified by the concerned subject teacher.
- 7.6 The first mid-term examination marks and first assignment marks make first set of internal evaluation and second mid-term examination marks and second assignment marks make second set of internal evaluation marks, and the better of these two sets of marks shall be taken as the final mid-term marks secured by the student towards internal evaluation in that theory subject.
- 7.7 If a student is absent for any test/assignment, he is awarded zero marks for that test/assignment. However a candidate may be permitted on genuine grounds provided he has taken permission before the mid-term examinations from the Head of the Department. Moreover he has to apply for makeup examinations within a week after completion of mid-term examinations. A subcommittee will be constituted by the College Academic Council to look into such cases. The subcommittee constituted by

- the College Academic Council may conduct improvement for the internal examinations for theory subjects for the interested candidates.
- 7.8 For practical subjects there shall be a continuous internal evaluation during the semester for 30 sessional marks and 70 end examination marks. Out of the 30 sessional marks, day-to-day work in the laboratory shall be evaluated for 20 marks and internal examination for practical shall be evaluated for 10 marks conducted by the concerned laboratory teacher. The end examination shall be conducted with one external examiner and one internal examiner. The external examiner shall be appointed from the panel of examiners as recommended by the Board of Studies in respective Branches.
  - 7.9 For the subject having design and/or drawing, (such as Engineering Graphics Engineering Drawing, Machine Drawing) and estimation, the distribution shall be 30 marks for internal evaluation (20 marks for day-to-day work and 10 marks for internal test) and 70 marks for end examination.
  - 7.10 There shall be a mini project preferably suggested by the industry of their specialization, to be taken up during the vacation after III year II semester examination. However, the mini project and its report shall be evaluated in IV Year I-Semester. The mini project shall be submitted in a report form and should be presented before the committee, which shall be evaluated for 100 marks. The committee consists of an External Examiner, Head of the Department, Supervisor of mini project and a senior faculty member of the department. There shall be no internal marks for mini project.
  - 7.11 There shall be a seminar presentation in IV year II semester. For the seminar, the student shall collect the information on a specialized topic and prepare a technical report, showing his understanding over the topic, and submit to the department, which shall be evaluated by the departmental committee consisting of Head of the Department, seminar supervisor and a senior faculty member. The seminar report and presentation shall be evaluated for 100 marks. There shall be no external examination for seminar.
  - 7.12 There shall be comprehensive Viva-Voce in IV Year II-Semester. The Comprehensive Viva-Voce will be conducted by a Committee consisting of (i) Head of the Department (ii) two Senior Faculty Members of the Department. The Comprehensive Viva-Voce is aimed to assess the student's understanding in various subjects he/she studied during the B.Tech Programme. The Comprehensive Viva-Voce is evaluated for 100 marks by the Committee. There are no internal marks for the Comprehensive Viva-Voce.
  - 7.13 Out of a total of 200 marks for the major project work, 60 marks shall be for internal evaluation and 140 marks for the end semester examination. The end semester examination (Viva-Voce) shall be conducted by a committee. The committee consists of an External Examiner, Head of the Department and the Project Supervisor. The internal evaluation shall be on the basis of two seminars given by each student on the topic of his major project.
  - 7.14 The topics for industry oriented mini project, seminar and major project work shall be different from each other.

## **8. Attendance Requirements:**

- 8.1 A student shall be eligible to appear for the end examinations if he acquires a minimum of 75% of aggregate attendance in all the subjects.
- 8.2 Condonation of shortage of attendance in each subject up to 10% on genuine grounds in each semester may be granted by the College Academic Council on recommendation by the Principal.
- 8.3 Shortage of attendance below 65% shall in no case be condoned.
- 8.4 Student falling short of attendance as specified above will be detained.
- 8.5 A student will not be promoted to the next semester unless he satisfies the attendance requirement of the present semester. They may seek re-admission for that semester when offered next. They may seek re-registration for all those subjects registered in that semester in which he got detained, by seeking re-admission for that semester as and when offered; in case there are any professional electives and/or open electives, the same may also be re-registered if offered. However, if those electives are not offered in later semesters, then alternate electives may be chosen from the same set of elective subjects offered under that category.

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

## **9. Academic Requirements:**

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

- 9.1 A student shall be deemed to have fulfilled the minimum academic requirements and earned the credits allotted to each theory or practical or design or drawing subject or project if he secures not less than 35% of marks in the end examination and a minimum of 40% of marks in the sum total of the internal evaluation and end examination taken together.
- 9.2 A student shall be promoted from I year to II year only if he fulfills the academic requirement of 24 credits out of 48 credits up to the end of I year from the relevant regular and supplementary examinations, whether he takes those examinations or not.
- 9.3 A student shall be promoted from II year to III year only if he fulfills the academic requirement of 43 credits out of 72 credits up to II year I semester or 57 credits out of 96 credits secured from all the examinations both regular and supplementary conducted up to end of II year II semester, whether or not the candidate takes the examinations and secures prescribed minimum attendance in II year II semester.
- 9.4 Student who fails to earn credits with an exemption of eight credits as indicated in the Programme structure within eight academic years from the year of admission shall forfeit his seat in B.Tech. Programme unless an extension is given by College Academic Council to complete the Programme for a further period.
- 9.5 A student shall register for all subjects covering 192 credits as specified and listed (with the relevant course/subjects classifications as mentioned) in the course structure, put up all the attendance and academic requirements and securing a minimum of P Grade (Pass Grade) or above in each subject, and earn 184 credits securing Semester Grade Point Average (SGPA)  $\geq 4.5$  in each semester, and Cumulative Grade Point Average (CGPA)  $\geq 4.5$  at the end of each successive semester, to successfully complete the B.Tech Programme.
- 9.6 When a student is detained due to shortage of attendance in any semester, he may be re-admitted into that semester, as and when offered, with the Academic Regulations of the batch into which he gets readmitted. However, no grade allotments of SGPA/CGPA calculations will be done for that entire semester in which he got detained.

- 9.7 When a student is detained due to lack of credits in any year, he may be readmitted in the next year, after fulfillment of the academic requirements, with the academic regulations of the batch into which he gets readmitted.
- 9.8 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 P Grade or above), may reappear for that subject/course at the supplementary examinations as and when conducted. In such cases, his internal marks assessed earlier for that subject/course will be carried over, and added to the marks to be obtained in the supplementary examination, for evaluating his performance in that subject.

## 10. Grading Procedure

- 10.1 Marks will be awarded to indicate the performance of each student in each Theory Subject, or Lab/Practicals or Seminar or Project or Mini-Project, Minor Course etc., based on the % of marks obtained in End examination, both taken together as specified in item no. 07 above and a corresponding Letter Grade shall be given.
- 10.2 As a measure of the student's performance, a 10-point Absolute Grading System using the following Letter Grades (UGC Guidelines) and corresponding percentage of marks shall be followed.

### Grades and Grade Points

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

- 10.3 A student obtaining 'F' Grade in any subject shall be considered 'failed' and will be required to reappear as 'Supplementary Candidate' in the End Semester Examination, as and when offered. In such cases, his Internal Marks in those Subject(s) will remain same as those he obtained earlier.
- 10.4 A Letter Grade does not imply any specific % of Marks.
- 10.5 In general, a student shall not be permitted to repeat any Subject/Course(s) only for the sake of 'Grade Improvement' or 'SGPA/CGPA Improvement'.



However, he has to repeat all the Subjects/Courses pertaining to the Semester, when he is detained (as listed in Item No. 9.8-9.9).

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

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

- 10.7 The student passes the Subject/Course only when he gets  $G.P. \geq 4$  (P Grade or above).
- 10.8 The Semester Grade Point Average (SGPA) is calculated by dividing the Sum of Credit Points ( $\sum C.P.$ ) 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

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

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  $i^{\text{th}}$  subject and  $G_i$  represents the Grade Points (G.P.) corresponding to the Letter Grade awarded for that  $i^{\text{th}}$  Subject.

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

$$\left\{ \sum_{j=1}^M C_j G_j \right\} / \left\{ \sum_{j=1}^M C_j \right\} \quad \dots \text{ for all 'S' semesters registered}$$

(i.e., upto and inclusive of 'S' semester,  $S \geq 2$ )

Where "M" is the total no. of Subjects (as specifically required and listed under the Course Structure of the parent Department) the student has 'REGISTERED' from the 1<sup>st</sup> Semester onwards upto and inclusive of the semester S (obviously  $M > N$ ), 'j' is the subject indicator index takes into account all subjects from 1 Subject and  $G_j$  represents the Grade Points (GP) corresponding to the Letter Grade awarded for that  $j^{\text{th}}$  subject. After registration and completion of I year I semester however, the SGPA of that Semester itself may be taken as the CGPA, as there are no cumulative effects.

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

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

## **11. Passing Standards:**

11.1 A student shall be declared successful or 'passed' in a Semester only when he gets a SGPA $\geq$ 4.5 (at the end of that particular Semester); and a student shall be declared successful or 'passed' in the B.Tech Programme, only when he gets a CGPA $\geq$ 4.5; subject to the condition that he secures a GP $\geq$ 4 (P Grade or above) in every registered Subject/Course in each Semester (during the B.Tech Programme) for the Degree Award, as required.

11.2. In spite of securing P Grade or above in some (or all) Subjects/Courses in any Semester, if a Student receives a SGPA $<$ 4.5 and /or CGPA $<$ 4.5 at the end of such a Semester, then he may be allowed on the following specific recommendations of the Head of the Department and subsequent approval from the Principal.

i. to go into the next subsequent Semester (Subject to fulfilling all other attendance and academic requirements as listed under items no.8-9);

ii. to 'improve his SGPA of such a Semester (and hence CGPA to 4.5 or above', by reappearing for one or more as per student's choice or the same subject (s)/courses(s) in which he has secured P Grade (s) in that semester, at the supplementary examinations to be held in the next subsequent semester(s).

In such cases, his internal marks in those subject(s) will remain same as those he obtained earlier. The newly secured letter grades will be recorded and taken into account for calculation of SGPA and CGPA, only if there is an improvement.

11.3. A Student shall be declared successful or 'passed' in any Mandatory (non-credit) Subject /Course, if he secures a 'Satisfactory Participation Certificate' for that course.

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

## **12. Declaration of Results:**

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

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

$$\% \text{ of Marks} = (\text{Final CGPA} - 0.5) \times 10$$

### 13. Award of Degree:

- 13.1 A student will be declared eligible for the award of the B.Tech. Degree if he fulfills the following academic regulations:
- Pursued a course of study for not less than four academic years and not more than eight academic years.
  - Register for 192 credits and secure 184 credits with an exemption of 8 credits in elective subjects only.
  - Secures Cumulative Grade Point Average (CGPA)  $\geq 4.5$ .
  - Students, who fail to fulfill all the academic requirements for the award of the degree within eight academic years from the year of their admission, shall forfeit their seat in B.Tech course unless extension is granted for a further period by College Academic Council (CAC) to complete the course.
- 13.2 A student who qualifies for the Award of the Degree as listed in **item 13.1** shall be placed in the following classes.

#### Award of Division:

S.No	Division	CGPA
1	First Class with Distinction	$\geq 7.5$
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	$\geq 4.5$ but less than 5.5

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

### 14. Withholding of Results:

If the student has not paid fees to University/College at any stage or has pending dues against his name due to any reason whatsoever, or if any case of indiscipline is pending against him, the result of the student may be withheld, and he will not be allowed to go into the next higher semester. The Award or issue of the Degree may also be with held in such cases.

### 15. Transitory Regulations:

Student who has discontinued for any reason, or has been detained for want of attendance or lack of required credits as specified, or who has failed after having undergone the degree programme, may be considered eligible for readmission to the same subject/course (or

equivalent subjects/courses, as the case may be), and same Professional Electives/Open Electives (or from set/category of electives or equivalents suggested, as the case may be) as and when they are offered (within the time-frame of 8 years from the date of commencement of his I year I Semester).

#### **16. Programme Pattern:**

- i. The entire course of study is of four academic years. All years shall be on semester pattern i.e two semesters per year. For each semester there shall be a minimum of 90 instruction days.
- ii. A student is eligible to appear for the end examination in a subject, but absent at it or has failed in the end examination may appear for that subject at the supplementary examination.
- iii. There shall be no branch transfers after the completion of admission process.

#### **17. General:**

- i. Where the words “he”, “him”, “his”, occur in the regulations, they include “she”, “her”, “hers”.
- ii. Where the words “subject” or “subjects”, occur in these regulations, they also imply “course” or “courses”.
- iii. The academic regulations should be read as a whole for the purpose of any interpretation.
- iv. In case of any doubt or ambiguity in the interpretation of the above rules, the decision of the Chairman, College Academic Council is final.

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

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

*(Effective for the students getting admitted into II-Year from the academic year 2016-2017 and onwards)*

1. The students have to acquire all credits from II to IV year of B.Tech. Program (Regular) for the award of the degree. Register all credits and secure all credits with the exemption of 8 credits in elective subjects.
2. Student, who fails to fulfill the requirements for the award of the degree in six consecutive academic years from the year of admission, shall forfeit his seat unless extension is granted by the College Academic Council to complete the Programme for a further period.
3. The same attendance regulations are to be adopted as that of B.Tech. (Regular).

#### **4. Promotion Rule:**

- i. A student shall be promoted from II year to III year only if he fulfills the academic requirement of 14 credits out of 24 credits up to II year I semester or 29 credits out of 48 credits secured from all the examinations both regular and supplementary conducted up to end of II year II semester, whether or not the candidate takes the examinations and secures prescribed minimum attendance in II year II semester.
  - ii. A student shall be promoted from III year to IV year only if he fulfills the academic requirements of 43 credits out of 72 credits secured from all the examinations both regular and supplementary conducted up to end of III Year I semester or 57 credits out of 96 credits secured from all the examinations both regular and supplementary conducted up to end of III year II semester, whether or not the candidate takes the examinations and secures prescribed minimum attendance in III year II semester.
5. All other regulations as applicable for B.Tech. IV year degree course (Regular) will hold good for B.Tech. (Lateral Entry Scheme)

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

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## MALPRACTICES RULES

### DISCIPLINARY ACTION FOR / IMPROPER CONDUCT IN EXAMINATIONS

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

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

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



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

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**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES**  
**(UGC-AUTONOMOUS)**  
**COMPUTER SCIENCE & ENGINEERING**

**COURSE STRUCTURE**

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

**I YEAR I SEM**

**I SEMESTER**

<b>S No</b>	<b>CODE</b>	<b>Subject</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits</b>
1	AJ001	Mathematics-I	4	0	0	4
2	AJ008	Engineering Physics	4	0	0	4
3	AJ013	English	3	0	0	3
4	AJ303	Engineering Graphics	2	0	4	4
5	AJ501	Problem Solving and Computer programming	4	0	0	4
6	AJ009	Engineering Physics Lab	0	0	3	2
7	AJ502	Problem Solving and Computer programming Lab	0	0	3	2
8	AJ503	Information Technology workshop	0	0	3	2
		<b>Total Credits</b>	<b>17</b>	<b>0</b>	<b>13</b>	<b>25</b>

**I YEAR II SEM**

**II SEMESTER**

<b>S No</b>	<b>CODE</b>	<b>Subject</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits</b>
1	AJ002	Mathematics-II	3	1	0	4
2	AJ203	Basic Electrical & Electronics Engineering	3	1	0	4
3	AJ010	Engineering Chemistry	3	0	0	3
4	AJ506	Data Structures through C++	4	0	0	4
5	AJ014	English Language Communication Skills Lab	0	0	3	2
6	AJ204	Basic Electrical & Electronics Engineering Lab	0	0	3	2
7	AJ306	Engineering Workshop	0	0	3	2
8	AJ507	Data Structures through C++ Lab	0	0	3	2
		<b>Total Credits</b>	<b>13</b>	<b>2</b>	<b>12</b>	<b>23</b>

**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES  
(UGC-AUTONOMOUS)  
COMPUTER SCIENCE AND ENGINEERING**

**COURSE STRUCTURE**

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

<b>II YR I SEM</b>			<b>III SEMESTER</b>			
<b>S.No</b>	<b>CODE</b>	<b>Subject</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits</b>
1	AJ3006	Mathematical Foundations of Computer Science	4	0	0	4
2	AJ3404	Switching Theory and Digital Logic Design	3	1	0	4
3	AJ3416	Computer Organization	4	1	0	4
4	AJ3511	Database Management Systems	4	1	0	4
5	AJ3512	Java Programming	4	1	0	4
6	AJ3513	Database Management Systems Lab	0	0	3	2
7	AJ3514	Java Programming Lab	0	0	3	2
		<b>Total</b>	<b>19</b>	<b>4</b>	<b>6</b>	<b>24</b>

<b>II YR II SEM</b>			<b>IV SEMESTER</b>			
<b>S.No</b>	<b>CODE</b>	<b>Subject</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits</b>
1	AJ4005	Probability and Statistics	4	0	0	4
2	AJ4515	Design and Analysis of Algorithms	4	1	0	4
3	AJ4516	Formal Languages and Automata Theory	4	1	0	4
4	AJ4517	Operating Systems	4	1	0	4
5	AJ4518	Software Engineering	4	0	0	4
6	AJ4519	Operating Systems Lab	0	0	3	2
7	AJ4520	CASE Tools Lab	0	0	3	2
		<b>Total</b>	<b>20</b>	<b>3</b>	<b>6</b>	<b>24</b>
8	AJMC01	Gender Sensitization	0	0	3	2*

**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES  
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COMPUTER SCIENCE AND ENGINEERING**

**COURSE STRUCTURE**

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

**III YR I SEM**

**V SEMESTER**

S.No	CODE	Subject	L	T	P	Credits
1	AJ5451	Microprocessors and Interfacing	4	1	0	4
2	AJ5521	Computer Networks	4	1	0	4
3	AJ5522	Compiler Design	4	1	0	4
4		<b>Open Elective-I:</b>	3	0	0	3
5	AJ5523 AJ5524 AJ5525	<b>Professional Elective –I:</b> 1. Machine Learning 2. Computer Forensics 3. Advanced Databases	3	0	0	3
6	AJ5452	Microprocessors and Interfacing Lab	0	0	3	2
7	AJ5526	Compiler Design & Computer Networks Lab	0	0	3	2
8	AJ5015	Advanced Communication Skills Lab	0	0	3	2
		<b>Total</b>	<b>18</b>	<b>3</b>	<b>9</b>	<b>24</b>
9	AJMC02	Value Education, Human Rights and Legislative Procedures	<b>3</b>	<b>0</b>	<b>0</b>	<b>2*</b>

**III YR II SEM**

**VI SEMESTER**

S.No	CODE	Subject	L	T	P	Credits
1	AJ6527	Data Warehousing and Data Mining	4	0	0	4
2	AJ6528	Web Programming	4	1	0	4
3	AJ6529	Network Security	4	1	0	4
4		<b>Open Elective-II:</b>	3	0	0	3
5	AJ6533 AJ6534 AJ6535	<b>Professional Elective –II:</b> 1.High Performance Computing 2.Design Patterns 3.Software Project Management	3	0	0	3
6	AJ6536	Data Warehousing and Data Mining Lab	0	0	3	2
7	AJ6537	Web Programming Lab	0	0	3	2
8	AJ6538	Visual Programming Lab	0	0	3	2
		<b>Total</b>	<b>18</b>	<b>2</b>	<b>9</b>	<b>24</b>
9	AJMC012	Environmental Studies	<b>3</b>	<b>0</b>	<b>0</b>	<b>2*</b>

**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES  
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COMPUTER SCIENCE AND ENGINEERING**

**COURSE STRUCTURE**

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

IV YR I SEM			VII SEMESTER			
S.No	CODE	Subject	L	T	P	Credits
1	AJ7539	Network Programming	4	1	0	4
2	AJ7540	Mobile Application Development	4	1	0	4
3		<b>Open Elective-III:</b>	3	0	0	3
4	AJ7541 AJ7542 AJ7433	<b>Professional Elective-III:</b> 1. Software Testing Methodologies 2. Computer Graphics and Multimedia 3. Digital Image Processing	3	0	0	3
5	AJ7431 AJ7545 AJ7546	<b>Professional Elective-IV:</b> 1. Embedded Systems 2. Information Retrieval Systems 3. Secure Software Engineering	3	0	0	3
6	AJ7547	Network Programming Lab	0	0	3	2
7	AJ7548	Mobile Application Development Lab	0	0	3	2
8	AJ8581	Mini Project	0	0	5	3
<b>Total</b>			<b>17</b>	<b>2</b>	<b>11</b>	<b>24</b>

IV YR II SEM			VIII SEMESTER			
S.No	CODE	Subject	L	T	P	Credits
1	AJ8549 AJ8550 AJ8551	<b>Professional Elective-V:</b> 1. E-Commerce 2. Semantic Web and Social Networks 3. Web Services	4	0	0	3
2	AJ8552 AJ8553 AJ8554	<b>Professional -VI:</b> 1. Human Computer Interaction 2. Big-Data Management 3. Soft Computing	4	0	0	3
3	AJ8582	Technical Seminar	0	0	0	3
4	AJ8583	Comprehensive Viva-Voce	0	0	0	3
5	AJ8584	Major Project	0	0	15	12
<b>Total</b>			<b>8</b>	<b>0</b>	<b>15</b>	<b>24</b>

**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES**  
(UGC-AUTONOMOUS)  
Narsampet, Warangal-506 332

**LIST OF OPEN ELECTIVES**

<b>Department of ECE</b>			
Sr.No.	Subject code	Name of the Open Elective Subject	Preferable Semester
1.	AJ5416	Electronic Measuring Instruments	V
2.	AJ5443	Computer Organization	V
3.	AJ5444	Linear Digital IC Applications	V
4.	AJ5445	Micro Electronic Circuits	V
5.	AJ6446	Instrumentation	VI
6.	AJ6447	Electromagnetic Theory	VI
7.	AJ6448	Image and Video Processing	VI
8.	AJ7449	Bio-medical Instrumentation	VII
9.	AJ7450	Digital Signal Processing	VII
10.	AJ7451	Wireless Sensor Networks	VII
<b>Department of EEE</b>			
11.	AJ5212	Electrical Technology	V
12.	AJ5214	Control Systems	V
13.	AJ5220	Renewable Energy Sources	V/VI
14.	AJ5221	Energy Storage Systems	V/VI
15.	AJ5222	Electrical Engineering Materials	V/VI
16.	AJ8240	Neural Networks & Fuzzy Logic	VI/VII
<b>Department of CSE</b>			
17.	AJ3511	Data Management Systems	III/IV
18.	AJ5521	Computer Networks	IV/V/VI
19.	AJ6529	Network Security	VI/VII
20.	AJ6530	Cloud Computing and IoT	VI/VII/VIII
21.	AJ6531	Natural Language Processing	VII/VIII
22.	AJ6532	Artificial Intelligence and Robotics	VII/VIII
23.	AJ8553	Big-Data Management	VII/VIII
<b>Department of ME</b>			
24.	AJ5360	Material Science	V
25.	AJ6309	Mechanics of Solids	V
26.	AJ6361	Thermal Sciences	VI
27.	AJ5362	Engineering Mechanics	V
28.	AJ7342	Finite Element Method	VII/VIII
29.	AJ7363	Optimization Techniques and Its Applications	VII/VIII

<b>Department of CE</b>			
30.	AJ5129	Disaster Management	V/VI
31.	AJ5130	Environmental Impact Assessment	V/VI
32.	AJ5131	Basics of Civil Engineering	V/VI
33.	AJ6132	Quantity Surveying and Costing	VI
34.	AJ7133	Construction Project Management	VI
<b>Department of MBA</b>			
35.	AJ_E01	Management Science	III/IV/V
36.	AJ_E02	Managerial Economics and Financial Analysis	III/IV/V/VI
37.	AJ_E03	Total Quality Management	V/VI
38.	AJ_E04	Global Marketing	VI/VII
39.	AJ_E05	Green Marketing	VI/VII
40.	AJ_E06	Intellectual Property Rights	V/VI
41.	AJ_E07	Supply Chain Management	V/VI
42.	AJ_E08	Statistical Quality Control	VI/VII
43.	AJ_E09	Financial Analysis and Reporting	V/VI
44.	AJ_E10	Micro and Small Enterprises Management	V/VI
<b>Note: ‘_’ represents the subject code with semester of the respective B.Tech branch</b>			

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

**( AJ 001) MATHEMATICS-I**

**I Yr. I Sem: Common to all branches**

**L T P C  
4 0 0 4**

**Course Objective:**

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

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

**UNIT-I:**

**Ordinary differential equations of first order:**

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

**UNIT-II:**

**Ordinary linear differential equations of higher order:**

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

**UNIT – III:**

**Differential calculus:**

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

**UNIT – IV:**

**Improper integration and multiple integrals:**

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

**UNIT – V:**

**Laplace Transformation:**

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

**Learning Outcomes:**



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

**Recommended Text Books:**

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

**Reference Book:**

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

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

**( AJ008) ENGINEERING PHYSICS**

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

**L T P C**

**4 0 0 4**

**Objectives:**

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

**UNIT-I:**

**Crystallography, Crystal Structures & Band Theory of Solids:**

**Crystallography & Crystal Structures:** Crystal planes & crystal directions, Miller indices, Inter-planar spacing of orthogonal crystal systems. Atomic radius, Co-ordination number and packing fraction of S.C.C., B.C.C & F.C.C., Crystal structure of diamond.

**Band theory of solids:** Schrodinger time independent wave equation and significance of wave function. Electrons in a periodic potential, Bloch theorem, Kronig-Penny model (Qualitative treatment), E-k curve, Origin of band formation in solids, Classification of materials into conductors, semi conductors and insulators.

**UNIT-II:**

**Semi-conductor Physics & Semi-conductor Devices.**

**Semi-conductor Physics:** Calculation of carrier concentration in intrinsic semiconductors and extrinsic semi conductors (N-type), Direct and Indirect band gap semi conductors, Hall effect & its applications.

**Semi-conductor devices:** Energy diagram of P-N diode, I-V characteristics of P-N junction diode, LED, photo diode & solar cell.

**UNIT-III:**

**Dielectrics & Magnetic Materials**

**Dielectrics:** Electric dipoles, Dipole moment, Polarizability, Electric susceptibility, Displacement vector, Electronic, ionic and orientational polarizations and calculations of electronic and ionic polarizabilities, Internal fields in solids, Piezo-electricity, Ferro electricity & Pyro electricity (elements only).

**Magnetic materials:** Origin of magnetic moment, Bohr magneton, Classification of dia, para and ferro magnetic materials on the basis of magnetic moment, Hysteresis curve, Soft and hard magnetic materials, Properties of anti-ferro and ferri magnetic materials and their applications in engineering.

#### **UNIT-IV:**

##### **Lasers & Fibre Optics**

**Lasers:** Characteristics of lasers, Spontaneous and stimulated emission of radiation, Einstein's coefficients (qualitative treatment), Population inversion, Lasing action. Semi conductor diode laser (homo-junction), Applications of lasers in engineering and medicine.

**Fibre Optics:** Acceptance angle and acceptance cone, Numerical aperture, Step index and graded index fibres, Applications of optical fibres in communication systems.

#### **UNIT-V:**

##### **Super-conductivity & Nano Science**

**Super-conductivity:** Zero resistance, Critical temperature, Perfect dia-magnetism, Meissner effect, Critical field ( $H_c$ ), Type-I & Type -II super conductors, Applications of super conducting magnets.

**Nano Science:** Nano scale, Surface to volume ratio, Quantum confinement, Top-down method: Bottom-up fabrication, sol-gel method, chemical vapour deposition method, Characterization by SEM (Principles) - Applications.

##### **Learning Outcomes:**

1. The student learns about crystalline materials and their structures.
2. The student learns about classification of solids by band theory.
3. The student learns how to calculate number of charge carriers in a semi conductor.
4. The student learns about fabrication of semi conductors into devices.
5. The student learns about dielectrics and magnetic materials along with their engineering applications.
6. The student learns about lasers, their construction and applications in engineering field.
7. The student learns about super conductors, classifications and their applications.
8. The student learns about nano materials and their fabrication methods along with their characterisation by XRD & SEM.

##### **Recommended Text Bbooks:**

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

**Reference Books:**

1. Solid State Physics – M.Armugam, Anuradha Publications.
2. Modern Physics – R. Murugesan & K. Siva Prasath, S. Chand & Co. (for Statistical Mechnaics).
3. Introduction to Solid State Physics, C. Kittel (Wiley Eastern).
4. Solid State Physics, A.J. Dekker (Macmillan).
5. Applied Physics, Mani Naidu Pearson Edition.
6. Engineering Physics, K. Vijay Kumar, T. Sreekanth, S. Chand Publications.
7. Engineering Physics, D.K. Bhattacharya, Poonam Tandon, Oxford University Press

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

**(AJ013) ENGLISH**

**I year B. Tech. I Sem common to all branches**

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

**Introduction:**

In view of the growing importance of English as a tool for global communication and the consequent emphasis on training students to acquire communicative competence, the syllabus has been designed to develop linguistic and communicative competencies of Engineering students. The prescribed books and the exercises are meant to serve broadly as students' handbooks.

In the English classes, the focus should be on the skills of reading, writing, listening and speaking and for this the teachers should use the text prescribed for detailed study. For example, the students should be encouraged to read the texts/selected paragraphs silently. The teachers can ask comprehension questions to stimulate discussion and based on the discussions students can be made to write short paragraphs/essays etc.

The text for non-detailed study is for extensive reading/reading for pleasure. Hence, it is suggested that they read it on their own the topics selected for discussion in the class. The time should be utilized for working out the exercises given after each section, as also for supplementing the exercises with authentic materials of a similar kind for example, from newspaper articles, advertisements, promotional material etc.. However, the stress in this syllabus is on skill development, fostering ideas and practice of language skills.

**Course Objectives:**

- To improve the language proficiency of the students in English with emphasis on LSRW skills.
- To equip the students to study academic subjects more effectively using the theoretical and practical components of the English syllabus.
- To develop the study skills and communication skills in formal and informal situations.

**SYLLABUS:**

**Listening Skills:**

**Objectives**

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

Students should be given practice in listening to the sounds of the language to be able to recognise them, to distinguish between them to mark stress and recognise and use the right intonation in sentences.

- Listening for general content
- Listening to fill up information
- Intensive listening
- Listening for specific information

## **Speaking Skills:**

### **Objectives**

- 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 – Individual/Group activities (Using exercises from all the **six** units of the prescribed text: *Skills Annexe: Functional English for Success.*)
- Just A Minute(JAM) Sessions.

## **Reading Skills:**

### **Objectives**

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

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

**NOTE :** *The students will be trained in reading skills using the prescribed text for detailed study.*

*They will be examined in reading and answering questions using ‘unseen’ passages which may be taken from authentic texts, such as magazines/newspaper articles.*

## **Writing Skills:**

### **Objectives:**

- To develop an awareness in the students about writing as an exact and formal skill
- To equip them with the components of different forms of writing, beginning with the lower order ones. Writing sentences
- Use of appropriate vocabulary
- Paragraph writing
- Coherence and cohesiveness
- Narration / description
- Note Making
- Formal and informal letter writing
- Describing graphs using expressions of comparison

## **TEXTBOOKS PRESCRIBED:**

### **For Detailed study**

- First Textbook entitled “*Skills Annexe -Functional English for Success*”, Published by Orient Black Swan, Hyderabad
- The Second Textbook entitled “*Epitome of Wisdom*”, published by Maruthi Publications, Hyderabad.

The course content and study material is divided into **Five Units**.

### **Unit – I:**

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

### **Unit –II:**

- Chapter entitled ‘*Wit and Humour*’ from ‘Skills Annexe’ -Functional English to Success Published by Orient Black Swan, Hyderabad
- Chapter entitled ‘*Mokshagundam Visvesvaraya*’ from “*Epitome of Wisdom*”, Published by Maruthi Publications, Hyderabad.

**and**

G-Types of Nouns and Pronouns

V- Homonyms, homophones synonyms, antonyms

### **Unit –III**

- Chapter entitled “*Advances in Science and Technology*” from “*Skills Annexe - Functional English for Success*” Published by Orient Black Swan, Hyderabad.
- Chapter entitled ‘*Three days To See*’ from “*Epitome of Wisdom*”, Published by Maruthi Publications, Hyderabad.

**and**

G- Verb forms

V- Noun, verb, adjective and adverb

### **Unit –IV**

- Chapter entitled ‘*Risk Management*’ from “*Skills Annexe -Functional English for Success*” Published by Orient Black Swan, Hyderabad.
- Chapter entitled ‘*Leela’s Friend*’ by R.K. Narayan from “*Epitome of Wisdom*”, Published by Maruthi Publications, Hyderabad.

**and**

G – Present tense

V – Synonyms and Antonyms

### **Unit –V**

- Chapter entitled ‘*Human Values and Professional Ethics*’ from “*Skills Annexe - Functional English for Success*” Published by Orient Black Swan, Hyderabad.
- Chapter entitled ‘*The Last Leaf*’ from “*Epitome of Wisdom*”, Published by Maruthi Publications, Hyderabad.

**and**

G- Past and future tenses

V- Vocabulary - idioms and Phrasal verbs

\* Exercises from the texts not prescribed shall also be used for classroom tasks.

### Course Outcomes

- Usage of correct English Language, written and spoken
- Enrichment of comprehension and fluency
- Gaining confidence in using language in varied situations

### Suggested Reading:

1. *Contemporary English Grammar Structures and Composition* by David Green, MacMillan Publishers, New Delhi. 2010.
2. **Innovate with English: A Course in English for Engineering Students**, edited by T Samson, Foundation Books.
3. English for Employability-**K. Purushotham, Orient Blackswan** (with CD).
4. Listening & Speaking Skills **Book I and Book II, Cambridge Publishers** (with CD's).
5. English Grammar Practice, **Raj N Bakshi, Orient Longman.**
6. **Technical Communication** by Daniel Riordan. 2011. **Cengage Publications. New Delhi.**
7. **Effective English, edited** by E Suresh Kumar, A RamaKrishna Rao, P Sreehari, Published by **Pearson**
8. Handbook of English Grammar and Usage, **Mark Lester and Larry Beason, Tata Mc Graw –Hill.**
9. Spoken English, **R.K. Bansal & JB Harrison, Orient Longman.**
10. Technical Communication, **Meenakshi Raman, Oxford University Press**
11. Objective English **Edgar Thorpe & Showick Thorpe, Pearson Education**
12. Grammar Games, **Renuvolcuri Mario, Cambridge University Press.**
13. Everyday Dialogues in English, **Robert J. Dixson, Prentice Hall India Pvt Ltd.,**
14. ABC of Common Errors **Nigel D Turton, Mac Millan Publishers.**
15. Basic Vocabulary **Edgar Thorpe & Showick Thorpe, Pearson Education**
16. Effective Technical Communication, **M Ashraf Rizvi, Tata Mc Graw –Hill.**
17. An Interactive Grammar of Modern English, **Shivendra K. Verma and Hemlatha Nagarajan , Frank Bros & CO**
18. A Communicative Grammar of English, **Geoffrey Leech, Jan Svartvik, Pearson Education**
19. Enrich your English, **Thakur K B P Sinha, Vijay Nicole Imprints Pvt Ltd.,**
20. A Grammar Book for You And I, **C. Edward Good, MacMillan Publishers.**
21. Practical English Usage (**ELBS**) **Michael Swan.**
22. Examine Your English – **Margaret Maison.**
23. The Parts of Speech: **Prof. P. Satyanarayana, P.C. Ray Publications, Warangal, 2003.**
24. The Tense: **Prof. P. Satyanarayana, P.C. Ray Publications, Warangal 2003**

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**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES  
(UGC-AUTONOMOUS)  
(AJ303) ENGINEERING GRAPHICS**

**I Year-I-Sem: EEE, CSE  
II-Sem: ECE**

**L T P C  
2 0 4 4**

**COURSE OBJECTIVES:**

1. Use various engineering drawing instruments.
2. Learn the basic conventions of drawings, dimensioning, scales and conic sections like ellipse, parabola and hyperbola.
3. Learn projections of points, lines viewed in different positions
4. Learn projections of plane surfaces and solids viewed in different positions.
5. Gain knowledge of sections of solids and their usage in real time applications.

**UNIT - I**

**INTRODUCTION TO ENGINEERING DRAWING:** Principles of Engineering Drawing and their significance-Drawing Instruments and their use. Principle of Dimensioning. Geometrical Constructions of regular polygons.

**Conic Sections:** Ellipse, parabola & Hyperbola (General Method only)

**Cycloidal Curves:** Cycloid, Epi – cycloid & hypo – cycloid.

**Involutes:** Circle, square, pentagon & hexagon.

**Scales:** Plain scale, Diagonal scale & Vernier scale.

**UNIT-II**

**ORTHOGRAPHIC PROJECTIONS IN FIRST ANGLE PROJECTION:**

Principles of Orthographic Projections – Conventions – First and Third Angle Projections

**PROJECTIONS OF PLANES:** Ortho Graphic Projections of Regular Planes-Surface inclined to both the principal planes.

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

**UNIT-III**

**SECTIONS AND SECTIONAL VIEWS:** Right Regular Solids – Prism, Cylinder, Pyramid, Cone & Auxiliary views.

**DEVELOPMENT OF SURFACES:** Right Regular Solids – Prism, Cylinder, Pyramid, Cone and their parts.

**UNIT-IV**

**ISOMETRIC PROJECTIONS:** Principles of Isometric Projection – Isometric Scale – Isometric Views – Conventions – Plane Figures, Simple and Compound Solids – Isometric projection of objects having non-isometric lines.

## **UNIT-V**

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

### **TEXT BOOKS**

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

### **REFERENCES:**

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

### **COURSE OUTCOMES:**

The students will be able to

1. Understand and draw the different types of conic sections
2. Analyze the projections of points, straight lines, plane surfaces, solids at different positions and angles.
3. Convert orthographic views into isometric views and vice versa.
4. Perform sections of solids, development of surfaces and their applications in human life.

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

**(AJ501) PROBLEM SOLVING & COMPUTER PROGRAMMING**

I Year I-Sem: ECE & CSE

L/T/P C

II-Sem: EEE

4/- /0 4

**Objectives:**

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

**Syllabus Content**

**Unit-1 (20%)**

Meaning of Problem Solving – Polya’s 4 Steps: Understanding the problem, Devising a plan, Carrying out the Plan, Looking back–Examples. (5%)

Introduction to programming, Algorithms and Flowcharts. Basics of C Language. Input and Output. Elementary problems and program writing. (15%)

**Unit-2 (20%)**

Control Statements in C: Conditional Execution and Selection, Iterative and Repetitive Execution, Termination. Nested Loops.

Arrays and Strings: Working with One-Dimensional Arrays, String Manipulation. Working with Multidimensional Arrays, Manipulating String Arrays.

Functions: Prototypes and Definition, Working with Functions, Passing Parameters To Functions. Introduction to Recursion. Scope and Storage Classes.

**Unit-3 (20%)**

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

**Unit-4 (20%)**

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

**Unit-5 (20%)**

Files In C: Using Files in C, Working with Text Files, Working with Binary Files, Direct File Input and Output. Files of Records, Random Access into Files of Records–File Management Functions.

**Text Book:**

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

**Reference Books:**

1. How to Solve it-A New Aspect of Mathematical Method-G.Polya, 1945, Princeton University Press, (Pages 1-29)
2. How to Solve it by Computer–R.G. Dromey, Prentice Hall of India, 1999, (Pages 1- 39)
3. Computer Programming, E. Balaguruswamy, McGraw Hill India (Pvt Ltd), 2014 (Pages 1.1 to 6.19)
4. Problem Solving and Program Design in C, Jeri R. Hanly, Elliot B. Koffman, 7th Edition, Pearson Education, 2013.
5. C Programming–A Modern Approach, K. N. King, 2nd Edition, W. W. Norton & Company; New York, 2008.
6. Programming in C–A Complete Introduction To The C Programming Language, Stephen G. Kochan 3rd Ed., Sams Publishing, 2005.

**Course Outcomes:**

- 1: A strong foundation in core Computer Science and Engineering, both theoretical and applied concepts.
- 2: An ability to apply knowledge of mathematics, science, and engineering to real-world problems.
- 3: Ability to model, understand, and develop complex software for System Software as well as Application Software.
- 4: A broad education necessary to understand the impact of Computer Science and Engineering solutions in the scientific, societal, and human contexts.

**Learning Outcomes:**

1. Understanding how problems are posed and how they can be analyzed for obtaining solutions.
2. Understanding the fundamentals of C programming.
3. Learning of sequencing, branching, looping and decision making statements to solve scientific and engineering problems.
4. Implementing different operations on arrays and creating and using of functions to solve problems.
5. Ability to design and implement different types of file structures using standard methodology.

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

**(AJ009) ENGINEERING PHYSICS LAB**

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

**L T P C  
0 0 3 2**

**Objectives:**

This course on *Engineering Physics* lab designed with 10 experiments in an academic year. The objective of the course is that the student will have exposure to various experimental skills which are very essential for an engineering student.

The experiments are selected from various areas of physics like physical optics, lasers, fiber optics, electricity and basic electronics.

Also, the student is exposed to various tools like screw gauge, vernier callipers, physical balance, spectrometer and microscope.

1. Determination of energy gap of semiconductor material of p-n junction diode
2. Determination of frequency of electrical vibrator by using Melde's experiment
3. Determination of wavelength of LASER by using diffraction grating
4. Determination of rigidity modulus of given wire using Torsional pendulum
5. R-C circuit analysis
6. Determination of Numerical aperture of given optical fiber
7. Determination of wavelength of sodium vapour lamp by using diffraction grating
8. Determination of the dispersive power of given prism by finding minimum deviation
9. Determination of the radius of curvature of given Plano convex lens by forming Newton's rings
10. L-C-R circuit analysis

**Laboratory Manual:**

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

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

**(AJ502) PROBLEM SOLVING & COMPUTER PROGRAMMING LAB**

**I Year I-Sem: ECE & CSE**

**L/T/P/C**

**II-Sem: EEE**

**-/ -/3/2**

**Objectives:**

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

**Syllabus Content**

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

- 7.b Write a C program to reverse the elements of an array (i.e., the first value should become last value etc.)
8. Write a C program that uses functions to perform all of the following:
- i. Reading of a matrix.
  - ii. Printing a matrix in a formatted form.
  - iii. Adding two compatible matrices to produce a result matrix
  - iv. Multiplying two compatible matrices to produce a result matrix.
9. Write a C program that uses functions to perform the following operations:
- i. To insert a sub-string in to a given main string from a given position.
  - ii. To delete n Characters from a given position in a given string.
  - iii. Write a C program to determine if the given string is a palindrome or not.
- 10.a Write a C program using pointer to create a two dimensional matrix, to input values in to the matrix and to display the matrix and its transpose. Free the memory properly.
- 10.b Write a C program to demonstrate calling of a function (like add,subtract,multiply) using a function pointer.
- 11.a Write a C program that displays the position or index in the string S where the string T begins, or – 1 if S doesn't contain T.
- 11.b Write a C program to count the lines, words and characters in a given text.
12. Write a menu driven C program that uses functions to perform the following operations on complex numbers stored in a structure:
- i. Reading a complex number
  - ii. Writing a complex number
  - iii. Addition of two complex numbers
  - iv. Multiplication of two complex numbers
- 13.a Write a C program which copies one text file to another text file and verify the correctness.
- 13.b Write a C program which copies one binary file to another binary file and verify the correctness.
- 13.c Write a command-line C program to reverse the first n characters in a file. (Note: The file name and n are specified on the command line.)
- 14.a Write a C program to display the contents of a file.
- 14.b Write a C program to produce reverse of the content of a text file into another text file and verify the result.
- 14.c Write a C program to merge two text files into a third text file ( i.e., the contents of the first file followed by those of the second are put in the third file) and verify the correctness.
15. Write an interactive C program that will maintain a list (roll,name,totalmarks) of student records. The menu shall have options like
- i. Add a new record
  - ii. Delete a record
  - iii. Modify a record
  - iv. Display a selected record

- v. Display all records
  - vi. Quit
16. Write a C Program that removes all comment lines from a C source file.

**Text Book**

1. *Programming in C*, Pradip Dey & Manas Ghosh, 2<sup>nd</sup> Ed., Oxford University Press, 2013 (Chapters 1, 2, 3, 4, 5 excluding 5.2.6, 6.1 to 6.8, 6.10.1, 7, 8, 9, 11)

**Reference Books:**

1. *How to Solve it - A New Aspect of Mathematical Method* - G.Polya, 1945, Princeton University Press, (Pages 1-29)
2. *How to Solve it by Computer* – R.G. Dromey, Prentice Hall of India, 1999, (Pages 1-39)
3. *Computer Programming*, E. Balaguruswamy, McGraw Hill India (Pvt Ltd), 2014 (Pages 1.1 to 6.19)
4. *Problem Solving and Program Design in C*, Jeri R. Hanly, Elliot B. Koffman, 7<sup>th</sup> Edition, Pearson Education, 2013.
5. *C Programming – A Modern Approach*, K. N. King, 2<sup>nd</sup> Edition, W. W. Norton & Company; New York, 2008.
6. *Programming in C – A Complete Introduction To The C Programming Language*, Stephen G. Kochan 3<sup>rd</sup> Ed., Sams Publishing, 2005.

**Course Outcomes:**

- 1: A strong foundation in core Computer Science and Engineering, both theoretical and applied concepts.
- 2: An ability to apply knowledge of mathematics, science, and engineering to real-world problems.
- 3: Ability to model, understand, and develop complex software for System Software as well as Application Software.
- 4: A broad education necessary to understand the impact of Computer Science and Engineering solutions in the scientific, societal, and human contexts.

**Learning Outcomes:**

1. Understanding how problems are posed and how they can be analyzed for obtaining solutions.
2. Understanding the fundamentals of C programming.
3. Learning of sequencing, branching, looping and decision making statements to solve scientific and engineering problems.
4. Implementing different operations on arrays and creating and using of functions to solve problems.
5. Ability to design and implement different types of file structures using standard methodology.

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

**(AJ503) INFORMATION TECHNOLOGY WORKSHOP**

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

**L / T / P C**

**0 / 0 / 3 2**

**Objectives:**

1. The modules include training on PC Hardware, Internet & World Wide Web and Productivity tools including LaTeX. PC Hardware introduces the students to a personal computer and its basic peripherals, the process of assembling a personal computer, installation of system software like, Linux and the required device drivers. Also hardware and software level troubleshooting process, tips and tricks would be covered.
2. Internet & World Wide Web module introduces the different ways of hooking the PC on to the internet from home and workplace and effective usage of the internet. Usage of web browsers, email, newsgroups and discussion forums would be covered. Also, awareness of cyber hygiene, i.e., protecting the personal computer from getting infected with the viruses, worms and other cyber attacks would be introduced.
3. Productivity tools module would enable the students in crafting professional text processed documents, spread sheets, slide shows and personal web sites using FOSS (Free and Open Source Software) and LaTeX.

**Syllabus Content**

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: 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.

**Internet & World Wide Web (4 Problems)**

**Problem 3: Orientation & Connectivity Boot Camp:** Students should get connected to their Local Area Network and access the Internet. 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 Preparation:** 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.

**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 18<sup>th</sup> 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

**Learning Outcomes:**

1. Troubleshooting of Hardware and Software
2. Usage of Web browsers to access Internet, Search Engines

**Note:** Students should be able to use FOSS like OpenOffice, Zoho Docs, LibreOffice, SoftMaker FreeOffice, GoogleDoss, ThinkFreeOnline, Live Document etc.

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

**(AJ002) MATHEMATICS – II**

**I Yr. II Sem: Common to all branches**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>3</b>	<b>1</b>	<b>0</b>	<b>4</b>

**Course Objective:**

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

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

**Unit-I :**

**Solution of Linear System:**

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

**Unit-II:**

**Eigen values and Eigen vectors:**

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

**Unit – III:**

**Fourier series:**

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

**Unit - IV:**

**Vector Calculus:**

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

**Unit – V:**

**Partial differential equation:**

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

**Learning Outcomes:**

1. The student learns about the rank of the matrix and solving of system of simultaneous linear equations.
2. The student learns about how to find the eigen values and eigen vectors of different engineering fields and they use concept of matrices in the development of programming languages.
3. By studying the Fourier series & Fourier transforms students are able to solve the problem related to theory of circuits and many applications in electronics engineering and communication engineering.
4. The concept of vector integrations (Green's, Gauss & Stoke's theorems), students are able to convert double integration into line integrations and triple integrations.
5. By studying the partial differential equation students are able to solve the many applications of mechanical and civil Engineering.

**Recommended Text Books:**

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

**Reference Book:**

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

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

**(AJ203) BASIC ELECTRICAL & ELECTRONICS ENGINEERING**

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

**L T/P/D C**

**3 1/-/ 4**

**Course Objective:**

This course introduces the concepts of basis electrical engineering parameters, quantities, analysis of AC and DC circuits, the construction operation and analysis of transformers, DC and AC machines. It also gives knowledge about operation of diode and 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.

**Three Phase AC Circuits:** Production of 3 - $\phi$  Voltages, Voltage & Current relationships of Line and Phase values for Star and Delta connections.

**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** - Diode equation, Energy Band diagram, V-I characteristic, Temperature dependence, Ideal versus practical, Static and dynamic resistances, Equivalent circuit.

**Rectifiers and Filters** - The P-N junction as a rectifier - A Half Wave Rectifier, Ripple Factor, Full Wave Rectifier, Bridge Rectifier, Filters – Inductor Filters, Capacitor Filters, L-section Filters,  $\pi$ - section Filters.

## **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, 9<sup>th</sup> Ed, 2006.
2. Engineering circuit analysis- by William Hayt and Jack E. Kemmerly, Mc Graw Hill Company, 6<sup>th</sup> 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, 2<sup>nd</sup> 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 basic electrical circuits, parameters, and operation of the transformers in the energy conversion process, electromechanical energy conversion, construction operation characteristics of DC machines and the constructional features and also fundamental and characteristics of diode and transistor. With which he/she can able to apply the above conceptual things to real-world electrical and electronics problems and applications.

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

**(AJ010) ENGINEERING CHEMISTRY**

**I Year B. Tech. I-SEM CIVIL, MECH. & EEE**  
**II-SEM ECE & CSE**

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

**Course Objectives:**

The purpose of these courses is to emphasize the relevance of fundamentals and applications of chemical sciences in the field of engineering. Thus, the courses have been conceived in such a way that they take into account appropriate combinations of old and new emerging concepts in the chemical sciences area and their current and potential uses in engineering. The Courses attempt to address the principles of general chemistry and specific topics relevant to various engineering disciplines, wherein the students can apply this learning in their respective areas of expertise.

The syllabus has sought to fulfill the objective of making the student of engineering and technology realize that chemistry like other subjects is the real base of their profession and that therefore they must have a good understanding of chemistry before they can use it in their profession.

**UNIT- 1:**

**Electro Chemistry**

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

**UNIT- 2:**

**Electrodes and Battery Chemistry**

Introduction, Types of electrodes: Reference electrodes (SHE, SCE and QH). Determination of PH. Numerical Problems. Batteries: Primary cells-Dry cell, Secondary cells - Pb-Acid storage cell, Fuel cells- Hydrogen-Oxygen fuel cell.

**UNIT-3:**

**Corrosion and Its control**

Introduction, Causes of corrosion, Types of corrosion- Dry and Wet corrosion (Galvanic & concentration). Factors affecting on corrosion, Corrosion controlling methods- Cathodic protection and Surface coatings (anodic and Cathodic), Methods of applications of metal coatings- Hot dipping and electroplating.



**UNIT-4:**  
**Polymer Chemistry**

Introduction, Functionality of Monomers, classification of polymers, Types of polymerization, Mechanism of polymerization: Chain and step. Plastics: Chemistry of Thermoplastic resins (PE, PVC & PS) and thermosetting resins (Nylon & Bakelite).

**UNIT – 5:**  
**Water Chemistry**

Introduction, Types of hardness, units and Numerical problems, Estimation of hardness of water-EDTA method. Boiler Troubles, caustic embrittlement & Boiler corrosion. Treatment of Boiler feed water- Zeolite and Ion-exchange process.

**Course Outcomes:**

- Applications of electrochemistry understanding different types of cells, their representation, knowledge of electrode potentials, utilization of electrical energy and its conversion into different energies.
- Applicability of electrodes in different fields of analysis.
- Understanding the utility of batteries as a source of energy in many electronic gadgets & their types.
- Enhancement of power generation by making of fuel cells. Knowledge of need for alternate source of energy.
- Deterioration of metal under the influence of environment, Mechanism of corrosion, Factors affecting corrosion, Prevention of corrosion using various methods & A basic knowledge of surface coatings.
- Improving the properties of plastics by various additives, Integral role of various polymers in our life style & Applicability of plastic in automobile and textile industry.
- Knowledge of hardness of water and its effects, Industrial utility of water especially for steam generation, Removal Methodologies of hardness.

**Text Books:**

1. Text Book of Engineering Chemistry by C. Parameshwara Murthy. B.S. Publications
2. Text Book of Engineering Chemistry by Y. Bharathi kumari and Jyotsna Cherikuri, VGS Publications.
3. Text Book of Engineering Chemistry by Shashi Chawla
4. Text Book of Engineering Chemistry by B. Ramadevi & Ch. Venkata Ramana Reddy, CENGAGE Learning 2012.

**Reference Books:**

1. Elementary principles of Physical Chemistry by P.W. Atkins, Oxford University Press.
2. Physical Chemistry by Puri & Sharma
3. Engineering Chemistry by Jain & Jain
4. Engineering Chemistry by Shashi Chawla.
5. Polymer Chemistry by Gourikar.
6. Physical Chemistry Glastone.

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

**(AJ506) DATA STRUCTURES THROUGH C++**

**I Year II-Sem: CSE**

<b>L/T/P</b>	<b>C</b>
<b>4/0/0</b>	<b>4</b>

**Objectives:**

To provide a comprehensive working knowledge on the object oriented language C++ and to implement abstract data types, linear and nonlinear data structures for problem solving. To provide a foundation on generic programming based on over loading concepts, inheritance and virtuality. To inculcate ability to grasp the behaviour of data structures such as stacks, queues, trees, hash tables, search trees, graphs and their representation and to apply them in problem solving. To provide a working knowledge on searching and sorting techniques and to write programs to solve problems on arrays, linked lists, stacks, queues, trees, graphs, hash tables and search trees.

**Syllabus Content**

**UNIT-1**

C++ Class Overview- Class Definition, Objects, Class Members, Access Control, Class Scope, Constructors and destructors, parameter passing methods, Inline functions, static class members, this pointer, friend functions, dynamic memory allocation and deallocation (new and delete), exception handling. Function Over Loading, Operator Overloading, Generic Programming- Function and class templates, Inheritance basics, base and derived classes, inheritance types, base class access control, runtime polymorphism using virtual functions, abstract classes, streams I/O.

**UNIT-2**

Algorithms, performance analysis- time complexity and space complexity. Review of basic data structures- The list ADT, Stack ADT, Queue ADT, Implementation using template classes in C++. Dictionaries, linear list representation, skip list representation, operations insertion, deletion and searching, hash table representation, hash functions, collision resolution-separate chaining, open addressing-linear probing, quadratic probing, double hashing, rehashing, extendible hashing, comparison of hashing and skip lists.

**UNIT-3**

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

**UNIT-4**

Search Trees: Binary Search Trees, Definition, ADT, Implementation, Operations- Searching, Insertion and Deletion, AVL Trees, Definition, Height of an AVL Tree, Operations \_ Insertion, Deletion and Searching. Trees definitions, B-Trees, B-Tree of order m, height of a B-Tree, insertion, deletion and searching, Comparison of Search Trees  
Graphs: Basic terminology, representations of graphs, graph search methods DFS, BFS.

## UNIT-5

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

### Text Books:

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

### References:

1. *Problem solving with C++*, The OOP, Fourth edition, W.Savitch, Pearson education.
2. *Data structures and Algorithm Analysis in C++*, Mark Allen Weiss, Pearson Education. Ltd., Second Edition.
3. *Data structures and algorithms in C++*, 3rd Edition, Adam Drozdek,Cengage Learning.
4. *Data Structures Using C++*, D.s. Malik,Cengage Learning, India Edition.
5. *Mastering Algorithms with C*,K.Loudon,O'Reilly,SPD PVT.Ltd.
6. *An introduction to Data structures and algorithms*, J.A.Storer,Springer.

### Course Outcomes:

- 1: A strong foundation in core Computer Science and Engineering, both theoretical and applied concepts.
- 2: An ability to apply knowledge of mathematics, science, and engineering to real-world problems.
- 3: Ability to model, understand, and develop complex software for System Software as well as Application Software.
- 4: An ability to communicate effectively, both in writing and oral.
- 5: A recognition of the need for, and an ability to engage in life-long learning.

### Learning Outcomes:

1. Understanding of fundamental concepts of abstract data types and general standard data structures.
2. Ability to design linear data structures stacks, queues and linked lists.
3. Ability to design nonlinear data structures, trees and graphs, and to implement their operations.
4. Ability to implement different searching and sorting techniques.
5. Ability to apply different searching and sorting techniques for real world problems..

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

**(AJ014) ENGLISH LANGUAGE COMMUNICATION SKILLS LAB**

<b>I year B. Tech. I Sem EEE, ECE, CIVIL &amp; MECH</b>	<b>L T P C</b>
<b>II Sem CSE</b>	<b>0 0 3 2</b>

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

**Course Objectives:**

- To facilitate computer-aided multi-media instruction enabling individualized and independent language learning
- To sensitise the students to the nuances of English speech sounds, word accent, intonation and rhythm
- To bring about a consistent accent and intelligibility in their pronunciation of English by providing an opportunity for practice in speaking
- To improve the fluency in spoken English and neutralize mother tongue influence
- To train students to use language appropriately for interviews, group discussion and public speaking

**Syllabus:**

**English Language Communication Skills Lab shall have two parts:**

- a. Computer Assisted Language Learning (CALL) Lab**
- b. Interactive Communication Skills (ICS) Lab**

The following course content is prescribed for the **English Language Communication Skills Lab**

**Exercise-I**

**CALL Lab:** Introduction to Phonetics – Speech Sounds – Vowels and Consonants

**ICS Lab:** Ice-Breaking Activity and JAM Sessions

Intensive Practice in Articles, Prepositions, Word Formation- Prefixes & Suffixes, Synonyms & Antonyms with Software/Handouts

**Exercise-II**

**CALL Lab:** Structure of Syllables - Past Tense Marker and Plural Marker – Weak Forms and Strong Forms - Consonant Clusters.

**ICS Lab:** Situational Dialogues – Role-Play- Expressions in Various Situations – Self-introduction and Introducing Others – Greetings – Apologies – Requests – Social and Professional Etiquette - Telephone Etiquette.

Concord (Subject in agreement with verb) and Words Often Misspelt- Confused/Misused

**Exercise-III**

**CALL Lab:** Minimal Pairs- Word Accent and Stress Shifts- Listening Comprehension.

**ICS Lab:** Descriptions- Narrations- Giving Directions and Guidelines.

Sequence of Tenses, Question Tags and One Word Substitutes.

**Exercise-IV**

**CALL Lab:** Intonation and Common Errors in Pronunciation.

**ICS Lab:** Extempore- Public Speaking

Active and Passive Voice, –Common Errors in English, Idioms and Phrases

#### **Exercise-V**

**CALL Lab:** Neutralization of Mother Tongue Influence and Conversation Practice

**ICS Lab:** Information Transfer- Oral Presentation Skills

Reading Comprehension and Job Application with Resume Preparation.

#### **Course Outcomes:**

- Better Understanding of nuances of language through audio- visual experience and group activities
- Neutralization of accent for intelligibility
- Speaking with clarity and confidence thereby enhancing employability skills of the students

#### **Minimum Requirement of Infrastructural Facilities for ELCS Lab:**

##### **1. Computer Assisted Language Learning (CALL) Lab:**

**The Computer Aided Language Lab** for 40 students with 40 systems, one master console, LAN facility and English language software for self- study by learners.

##### **System Requirement (Hardware Component):**

*Computer network with LAN with minimum 60 multimedia systems with the following specifications:*

- i) P – IV Processor
  - a) Speed – 2.8 GHZ
  - b) RAM – 512 MB Minimum
  - c) Hard Disk – 80 GB
- ii) Headphones of High Quality

##### **2. Interactive Communication Skills (ICS) Lab :**

**The Interactive Communication Skills Lab:** A spacious room with movable chairs and audio-visual aids with a Public Address System, a T. V., a digital stereo –audio & video system, camcorder etc.

**Prescribed Lab Manual:** A Manual entitled “*English Language Communication Skills (ELCS) Lab Manual- cum- Work Book*”, published by Cengage Learning India Pvt. Ltd, New Delhi. 2013.

- *In addition to the prescribed lab manual, all the listening and speaking activities mentioned in Text-1 and Text-2 can be conducted in the English Language Communication Skills Lab.*

#### **Suggested Software:**

- **Macmilan Dictionary Modern English** (with CD).
- **Oxford Advanced Learners’ Dictionary** (with CD).
- **Cambridge Advanced Learners’ English Dictionary with CD.**
- **Grammar Made Easy by Darling Kindersley**
- **Punctuation Made Easy by Darling Kindersley**
- Clarity Pronunciation Power – Part I
- Clarity Pronunciation Power – part II

- **Oxford Advanced Learner's Compass, 8<sup>th</sup> Edition**
- ***DELTA's key to the Next Generation TOEFL Test: Advanced Skill Practice.***
- Lingua TOEFL CBT Insider, by Dreamtech
- TOEFL & GRE (KAPLAN, AARCO & BARRONS, USA, Cracking GRE by CLIFFS)
- **English in Mind (Series 1-4), Herbert Puchta and Jeff Stranks with Meredith Levy, Cambridge**
- **English Pronunciation in Use** (Elementary, Intermediate, Advanced) Cambridge University Press
- Raman, M & Sharma, S. 2011. Technical Communication, OUP
- Sanjay Kumar & Pushp Lata. 2011. Communication Skills, OUP

### **Suggested Reading:**

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

### **DISTRIBUTION AND WEIGHTAGE OF MARKS**

#### ***English Language Laboratory Practical Examination:***

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

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

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

**(AJ204) BASIC ELECTRICAL & ELECTRONICS ENGINEERING LAB**

Class: I Year B.Tech II Semester.  
Branch: CSE  
Duration of University Examination: 3 Hrs  
Marks

Practicals: 3  
Tutorials: 0  
University Examination: 50  
Sessionals: 25 Marks

**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)

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

**(AJ306) ENGINEERING WORKSHOP**

**I Year II Sem: CSE**

**L T P C**  
**0 0 3 2**

**COURSE OBJECTIVES:**

1. Know the usage of various tools and their application in carpentry, tin smithy.
2. Know the usage of various tools and their application in black smithy, foundry, welding and house wiring.
3. Make lap joint and dove tail joint in carpentry.
4. Make scoop, funnel and tray like items in tin smithy.
5. Use one – way, two-way switches, parallel and series connections in house wiring.
6. Know the basics of welding.

**UNIT - I**

**TRADES FOR EXERCISES:** (Any six trades from the following for Mechanical Engineering Branch & Any four trades for all other Branches with minimum of two exercises in each trade)

1. Carpentry
2. Fitting
3. Tin – Smithy
4. Black Smithy
5. House – wiring
6. Foundry
7. Plumbing
8. Soldering

**UNIT - II**

**TRADES FOR DEMONSTRATION & EXPOSURE**

1. Demonstration of Power tools & wiring
2. Welding.
3. Machine Shop

**TEXTBOOKS:**

1. Workshop Manual – P.Kannaiah / K.L.Narayana/Scitech Publishers.
2. Workshop Manual – Venkat Reddy/BS Publication / 6<sup>th</sup> Edition.



## **COURSE OUTCOMES:**

The students will be able to

1. Know the fundamental knowledge of various trades and their usage in real time applications.
2. Gain knowledge of Foundry, Welding, Black smithy, Fitting, Machine shop and house wiring
3. Understand the basis for analyzing power tools in construction and wood working, electrical engineering and mechanical engineering.

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

**(AJ507) DATA STRUCTURES THROUGH C++ Lab**

**I Year II-Sem: CSE**

<b>L/T/P</b>	<b>C</b>
<b>4/0/0</b>	<b>4</b>

**Objectives:**

To provide a comprehensive working knowledge on the object oriented language C++ and to provide implementation experience on abstract data types, linear and nonlinear data structures for problem solving. To provide a working knowledge on generic programming based on over loading concepts, inheritance and virtuality. To inculcate ability to grasp the behaviour of data structures such as stacks, queues, trees, hash tables, search trees, graphs and their representation and to apply them in problem solving. To provide an application oriented working knowledge on searching and sorting techniques and to write programs to solve problems on arrays, linked lists, stacks, queues, trees, graphs, hash tables and search trees.

**Syllabus Content**

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

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

**Text Books:**

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

**Course Outcomes:**

- 1: A strong foundation in core Computer Science and Engineering, both theoretical and applied concepts.
- 2: An ability to apply knowledge of mathematics, science, and engineering to real-world problems.
- 3: Ability to model, understand, and develop complex software for System Software as well as Application Software.
- 4: An ability to communicate effectively, both in writing and oral.
- 5: A recognition of the need for, and an ability to engage in life-long learning.

**Learning Outcomes:**

1. Understanding of fundamental concepts of abstract data types and general standard data structures.
2. Ability to design linear data structures stacks, queues and linked lists.
3. Ability to design nonlinear data structures, trees and graphs, and to implement their operations.
4. Ability to implement different searching and sorting techniques.
5. Ability to apply different searching and sorting techniques for real world problems..

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

**(AJ3006) MATHEMATICAL FOUNDATIONS OF COMPUTER SCIENCE**

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

**L T P C  
4 0 0 4**

**Objectives:**

- To explain with examples the basic terminology of functions, relations, and sets.
- To perform the operations associated with sets, functions, and relations.
- To relate practical examples to the appropriate set, function, or relation model, and interpret the associated operations and terminology in context.
- To describe the importance and limitations of predicate logic.
- To relate the ideas of mathematical induction to recursion and recursively defined structures.
- To use Graph Theory for solving problems.

**UNIT-I**

**Mathematical Logic** : Statements and notations, Connectives, Truth Tables, tautology, equivalence implication, Normal forms, Quantifiers, universal quantifiers.

**Predicates** : Predicative logic, Free & Bound variables, Rules of inference, Consistency, proof of contradiction.

**UNIT-II**

**Relations** : Properties of Binary Relations, Equivalence, Transitive Closure, Compatibility and partial ordering relations, Lattices, Hasse diagram. Functions: Inverse Function Composition of functions, recursive Functions, Lattice and its Properties, homomorphism, Isomorphism.

**UNIT-III**

**Elementary Combinatorics** : Basis of counting, Combinations & Permutations, with repetitions, Constrained repetitions, Binomial Coefficients, Binomial Multinomial theorems, the principles of Inclusion – Exclusion. Pigeon hole principles and its application.

**UNIT-IV**

**Recurrence Relation** : Generating Functions, Function of Sequences Calculating Coefficient of generating function, Recurrence relations, Solving recurrence relation by

substitution and Generating functions. Characteristics roots solution of In homogeneous Recurrence Relation.

#### **UNIT-V**

**Graph Theory :** Representation of Graph, DFS, BFS, Spanning Trees, planar Graphs. Graph Theory and Applications, Basic Concepts Isomorphism and Sub graphs, Multi graphs and Euler circuits, Hamiltonian graphs, Chromatic Numbers.

#### **TEXT BOOKS :**

1. Elements of DISCRETE MATHEMATICS- A computer Oriented Approach-C L Liu, D P Mohapatra. Third Edition, Tata McGraw Hill.
2. Discrete Mathematics for Computer Scientists & Mathematicians, J.L. Mott, A. Kandel, T.P. Baker, PHI.

#### **REFERENCE BOOKS :**

1. Discrete Mathematics and its Applications, Kenneth H. Rosen, Fifth Edition. TMH.
2. Discrete Mathematical structures Theory and application-Malik & Sen, Cengage.
3. Discrete Mathematics with Applications, Thomas Koshy, Elsevier.
4. Logic and Discrete Mathematics, Grass Man & Trembley, Pearson Education.

#### **OUTCOMES:**

- Ability to Illustrate by examples the basic terminology of functions, relations, and sets and demonstrate knowledge of their associated operations.
- Ability to Demonstrate in practical applications the use of basic counting principles of permutations, combinations, inclusion/exclusion principle and the pigeonhole methodology.
- Ability to represent and Apply Graph theory in solving computer science problems.

**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES**  
**(UGC-AUTONOMOUS)**  
**(AJ3404) Switching Theory and Logic Design**

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

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>3</b>	<b>1</b>	<b>0</b>	<b>4</b>

**Course Objective:**

- This Subject exposes the students to learn Digital Fundamentals
- After studying this subject the student will be able to Design, Analyze and Interpret Combinational and Sequential Digital Circuits.

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

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

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

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

**UNIT-III: COMBINATIONAL LOGIC DESIGN**

Combinational Circuit, Analysis Procedure, Design Procedure, Examples of Combinational Digital Circuits(Adders, Subtractor, Adder-Subtractor etc.) Hazards in Combinational Circuits, Hazards free realization.

**UNIT-IV: SEQUENTIAL LOGIC DESIGN**

Introduction to sequential Circuits: Latches and Flip-Flops(RS,JK, D, T and Master Slave), Design of Clocked Flip-Flop, Flip-Flop Conversion,

**Counters:** Design of Single Mode and Multi Mode Counters, Ripple Counters, Synchronous Counters.

**Registers:** Shift Registers, Shift Register Counters and Random Sequence Generators.

**UNIT-V: DESIGN & ANALYSIS OF SEQUENTIAL CIRCUITS**

Introduction to Mealy and Moore Design, State Diagrams, Analysis and Design of Synchronous sequential Circuits: Finite State Machines, State Reduction, Minimization and Design of Next state Decoder.

**Text Books:**

1. Maris Mano: "Digital Design" Prentice Hall 1993.

**Reference:**

1. John F Wakerly: "Digital Design : Principles and Practices", Prentice-Hall, 2<sup>nd</sup> Ed., 2002

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

**(AJ3416) COMPUTER ORGANIZATION**

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

**L T P C**

**B.Tech III Year I-Sem: ECE**

**4 1 0 4**

**Objectives:**

- To understand basic components of computers.
- To explore the I/O organizations in depth.
- To explore the memory organization.

**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, Address sequencing, micro program example, design of control unit, hard wired control, Micro programmed control.

**UNIT III:**

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

**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:**

CO1: Ability to model, understand, and develop complex software for system software as well as application software

CO2: The broad education necessary to understand the impact of computer science and engineering solutions in the scientific, societal and human contexts

CO3: A 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.

CO4: Be able to manipulate simple Boolean expressions using the theorems and postulates of Boolean algebra and to minimize combinational functions.

CO5: Be able to design and analyze combinational circuits and to use standard combinational functions/building block to build more complex circuits.

CO6: Be able to learn the internal organization of popular 8086 microprocessors

**Learning outcomes:**

1. Understand the basic components of a computer, including CPU, memories, and input/output, and their organization, Ability to use memory and I/O devices effectively.

2. Understand the cost performance tradeoff in designing memory hierarchy and instruction sets, able to explore the hardware requirements for cache memory and virtual memory.

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

**(AJ3511) DATABASE MANAGEMENT SYSTEMS**

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

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**Objectives:**

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

**UNIT-I**

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” 7<sup>th</sup> Edition.
2. Elmasri Navrate “Fundamentals of Database Systems” Pearson Education

#### **Course outcomes:**

- 1: A strong foundation in core Computer Science and Engineering, both theoretical and applied concepts.
- 2: Ability to model, understand and develop complex software for system software as well as application software.
- 3: The broad education necessary to understand the impact of Computer Science and Engineering solutions in the scientific, societal and human contexts.
- 4: A Knowledge of Contemporary Issues.

#### **Learning outcomes:**

1. Ability to understand the fundamental concepts of database management.
2. Ability to design and query databases, as well as understand the internals of databases.
3. Ability to define basic functions of DBMS & RDBMS.
4. Ability to describe database development process and to apply the Relational Database Model  
to understand the Logical and Physical aspects of the DBMS architecture.
5. Ability to analyze database models & entity relationship models and to draw the E-R diagram  
for the given case study.
6. Ability to use Structured Query Language (SQL) with complex queries.

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**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES  
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**(AJ3512) JAVA PROGRAMMING**

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

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**Objectives:**

- To understand object oriented programming concepts, and apply them in problem solving.
- To learn the basics of java Console and GUI based programming.

**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 Listeners, 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 framework, Generics, Commonly used Collection classes Array List, Vector, Iterator, String Tokenizer, Random, Scanner, Calendar and Properties

**Connecting to Database** - JDBC Type 1 to 4 drivers, 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 Dale Srien, 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 Oriented 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. To analyze and design a computer program to solve real world problems based on object-oriented principles
2. write computer programs to solve real world problems in Java
3. To learn and appreciate the importance and merits of proper comments in source code and API documentations
4. To write simple GUI interfaces for a computer program to interact with users, and to understand the event-based GUI handling principles

#### **Learning outcomes:**

1. Understanding of OOP concepts and basics of Java programming (Console and GUI based)
2. The skills to apply OOP and Java programming in problem solving
3. Should have the ability to extend his/her knowledge of Java programming further on his/her own.

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

**(AJ3513) DATABASE MANAGEMENT SYSTEMS LAB**

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

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**Objectives:**

This lab enables the students 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. 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.

**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	Passport_ID

Passport_ID	Ticket_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 (45,1lirupathi,'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 subqueries) 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.TicketNO > 60 THEN  
SET New.Ticket 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 stdld,stdFirstname FROM students WHERE  
stdId=in_customer_id;  
OPEN c1;  
FETCH c1 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:**

- CO1: Ability to design and implement a database schema for given problem.
- CO2: Be capable to Design and build a UI application.
- CO3: Apply the normalization techniques for development of application software to realistic problems.
- CO4: Ability to formulate queries using SQL DML/DDL/DCL commands.

**Learning outcomes:**

1. Ability to understand the fundamental concepts of database management.
2. Ability to design and query databases, as well as understand the internals of databases.
3. Ability to define basic functions of DBMS & RDBMS.
4. Ability to describe database development process and to apply the Relational Database Model  
to understand the Logical and Physical aspects of the DBMS architecture.
5. Ability to analyze database models & entity relationship models and to draw the E-R diagram  
for the given case study.
6. Ability to use Structured Query Language (SQL) with complex queries.

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**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES**  
**(UGC-AUTONOMOUS)**  
**(AJ3514) JAVA PROGRAMMING LAB**

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

**L T P C**

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**Objectives:**

- To introduce java compiler and eclipse platform.
  - To impart hand on experience with java programming.
1. a) Write a java program that prints all real solutions to the quadratic equation  $ax^2+bx+c=0$ . Read in a, b ,c and use the quadratic formula. If the discriminator  $b^2 - 4ac$  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 computes 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 and Num2. 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:**

- CO1: Understand programming language concepts, particularly Java and object-oriented concepts.
- CO2: Write, debug, and document well-structured Java applications
- CO3: Implement Java classes from specifications.
- CO4: Effectively create and use objects from predefined class libraries

**Learning Outcomes:**

1. Basics of java programming, multi-threaded programs and Exception handling.
2. The skills to apply OOP in Java programming in problem solving.
3. Ability to access data from a DB with Java programs.
4. Use of GUI components (Console and GUI based).

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**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES  
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**(AJ4005) PROBABILITY & STATISTICS**

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

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**Course Objective:**

The main purpose of teaching Probability and Statistics is to develop the knowledge of the student. In the syllabus we concentrate on a few carefully selected basic ideas of general practical importance which are especially suitable for teaching the students probability and statistics to think and develop his own creative ability to solve engineering problem.

**UNIT-I: Probability**

Sample Space and events – Probability – The axioms of probability – Some Elementary theorems – Conditional probability – Baye’s theorem.

**UNIT-II: Single Random Variables and Probability Distributions.**

Random variables – Discrete and continuous. Probability distributions, mass function/ density function of a probability distribution . Mathematical Expectation, Moment about origin, Central moments Moment generating function of probability distribution.

Binomial , Poisson , Normal distribution and Exponential distributions.

**UNIT-III: Correlation & Regression**

Covariance of two random variables, Correlation:- Coefficient of correlation, The rank correlation.

Regression: Regression Coefficient, The lines of regression and multiple correlation & regression.

**UNIT-IV: Sampling Distributions and Testing of Hypothesis**

**Sampling:** Definitions of population, sampling, statistic, parameter. types of sampling, Expected values of Sample mean and variance, sampling distribution, standard error, sampling distribution of means and sampling distribution of variance.

**Parameter Estimations** – Likelihood estimate, interval estimations.

**Testing of hypothesis:** Null hypothesis, Alternate hypothesis, type I, & type II errors – critical region, confidence interval, Level of significance. One sided test, Two sided test,

**Large sample tests:** (i) Test of Equality of means of two samples equality of sample mean and population mean (cases of known variance & unknown variance, equal and unequal variances)

(ii) Tests of significance of difference between sample S.D and population S.D.

(iii) Tests of significance difference between sample proportion and population proportion & difference between two sample proportions.

**Small Sample Tests:**

Student t-distribution, its properties; Test of significance difference between sample mean and population mean; difference between means of two small samples

Snedecor's F- distribution and its properties. Test of equality of two population variances

Chi-square distribution, its properties, Chi-square test of goodness of fit

**UNIT- V: Queuing Theory :**

Queuing Theory: Notation and assumption, Poisson Process queuing models with Poisson Process input - exponential service, infinite Queue-infinite source, single server model, infinite queue-infinite source, arrival Theorem – pure birth process and death process M/M/1 Model, finite queue-infinite source, single server model.

**TEXT BOOKS:**

1. Fundamentals of Mathematical Statistics by S C Gupta and V.K.Kapoor (chapters IV&V)
2. Probability and Statistics for Engineers and Scientists by Sheldon M. Ross, academic press
3. Probability and Statistics for Engineering and the Sciences by Jay I. Devore.

**REFERENCES BOOKS:**

1. Mathematics for engineers series –Probability Statistics and Stochastic Process by K.B.Datta and M.A. Srinivas, Cengage publications
2. Probability, Statistics and Stochastic process by Prof.A R K Prasad., Wiley India
3. Probability and Statistics by T.K.V.Iyengar & B.Krishna Gandhi
4. A Text Book of Probability and Statistics, Shahnaz Bathul, Cengage Learning

**COURSE OUTCOMES:**

By studying the Probability & Statistics students are able to describes randomness or an uncertainty in certain realistic situations it can be of either discrete or continuous functions and the study of binomial, and the Poisson and normal random variables for the continuous case predominantly describe important probability distributions. Important statistical properties for this random variables provide very good insight and essential for Industrial applications. By studying the queuing theory students are able to solve the real world problems of queuing systems.

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

**(AJ4515) DESIGN AND ANALYSIS OF ALGORITHMS**

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

**L T P C**

**4 1 0 4**

**Objectives:**

This course trains the students to study a few known methods of solution processes, build new solution algorithms, and analyzes the asymptotic performance of algorithms and to write rigorous correctness proofs for algorithms. Focus would be to make the students to choose the appropriate data structures and algorithm design methods for specified classes of applications; to understand how the choice of data structures and algorithm design methods would impact the performance of programs and how to compare them. Design methods such as the greedy method, divide and conquer, dynamic programming, backtracking and branch and bound; and methods to deal with logarithmic type, polynomial type and non polynomial type of classes of problems; synthesis of efficient algorithms in common engineering design situations would be discussed.

**UNIT I:**

**Introduction:** Algorithm, Pseudo code for expressing algorithms, Performance Analysis- Space complexity, Time complexity, Asymptotic Notation- Big oh notation, Omega notation, Theta notation and Little oh notation, Probabilistic analysis, Amortized analysis. Divide and conquer: General method, applications-Binary search, Quick sort, Merge sort, Strassen's matrix multiplication.

**UNIT II:**

**Disjoint Sets:** Disjoint set operations, union and find algorithms, spanning trees. Backtracking: General method, applications-n-queen problem, sum of subsets problem, graph coloring, Hamiltonian cycles. connected components and biconnected components.

**UNIT III:**

**Dynamic Programming:** General method, applications-Matrix chain multiplication, Optimal binary search trees, 0/1 knapsack problem, All pairs shortest path problem, Travelling sales person problem, Reliability design.

**UNIT IV:**

**Greedy method:** General method, applications-Job sequencing with deadlines, 0/1 knapsack problem, Minimum cost spanning trees, Single source shortest path problem.

**UNIT V:**

**Branch and Bound:** General method, applications - Travelling sales person problem, 0/1 knapsack problem- LC Branch and Bound solution, FIFO Branch and Bound solution.

**NP-Hard and NP-Complete problems:** Basic concepts, non deterministic algorithms, NP - Hard and NP-Complete classes, Cook's theorem.

**Text Books:**

1. Fundamentals of Computer Algorithms, E.Horowitz, S.Sahni, S.Rajasekaran , Galgotia publications pvt. Ltd.
2. Design and Analysis of Algorithms, S.Sridhar, Oxford Higher Education.



**References:**

1. Introduction to Algorithms, second edition, T. H. Cormen, C. E. Leiserson, R. L. Rivest, and C. Stein, PHI Pvt. Ltd. / Pearson Education
2. Design and Analysis of Algorithms - Parag Himanshu Dave, Himanshu Bhalchandra Dave Publisher: Pearson
3. Algorithm Design: Foundations, Analysis and Internet examples, M. T. Goodrich and R. Tomassia, John Wiley and Sons.
4. Introduction to Design and Analysis of Algorithms A strategic approach, R. C. T. Lee, S. S. Tseng, R. C. Chang and T. Tsai, Mc Graw Hill.
5. Data structures and Algorithm Analysis in C++, Allen Weiss, Second edition, Pearson Education.
6. Design and Analysis of algorithms, Aho, Ullman and Hopcroft, Pearson Education.
7. Algorithms – Richard Johnsonbaugh and Marcus Schaefer, Pearson Education

**Course Outcomes:**

1. Analyze the time and space complexity of an algorithm
2. Design algorithms using greedy strategy and dynamic programming
3. Identify algorithm design methodology to solve problems
4. Analyze the classes P, N and NP Complete and be able to prove that a certain problem is NP complete

**Learning Outcomes:**

1. The students would acquire knowledge as to know how problems are analyzed and how they were solved in the best possible way.
2. The students would be able to classify new problems into some of the known category of problems.
4. The students would be able to discuss the correctness of algorithms using inductive proofs and invariants and they can estimate worst-case running times of algorithms using asymptotic analysis
5. The students would be able to devise appropriate data structures and data handling mechanisms for efficient data processing.
6. The students would gain ability to formulate solution processes for new problems in daily business and professional life.
7. The students would be able to demonstrate better problem solving capability that prepares them for leadership roles.
8. The students would be able to better communicate their ideas for effective collaborations.

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**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES**  
**(UGC-AUTONOMOUS)**  
**(AJ4516) FORMAL LANGUAGES AND AUTOMATA THEORY**

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

**L T P C**  
**4 1 0 4**

**Objectives:**

The purpose of this course is to acquaint the student with an overview of the theoretical foundations of computer science from the perspective of formal languages.

- Classify machines by their power to recognize languages.
- Employ finite state machines to solve problems in computing.
- Explain deterministic and non-deterministic machines.
- Comprehend the hierarchy of problems arising in the computer sciences.

**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  $\hat{\Gamma}$  transitions - Significance, acceptance of languages. Conversions and Equivalence: Equivalence between NFA with and without  $\hat{\Gamma}$  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

**REFERENCES:**

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:**

The student will be able

CO1: Apply the grammars and languages to design abstract computer machines.

CO2: Model the logic and solutions to decidable and undecidable problems through computability theory.

CO3: Accomplish the Lemma’s, Hypothesis for various languages.

CO4: Design deterministic and non-deterministic machines.

**Learning Outcomes:**

**1. Knowledge and understanding**

-Acquire a full understanding and mentality of Automata Theory as the basis of all computer science languages design

-Have a clear understanding of the Automata theory concepts such as RE's, DFA's, NFA's, Stack's, Turing machines, and Grammars

**2. Cognitive skills (thinking and analysis).**

-Be able to design FAs, NFAs, Grammars, languages modeling, small compilers basics

-Be able to design sample automata

**3. Communication skills (personal and academic).**

-Be able to minimize FA's and Grammars of Context Free Languages

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**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES**  
**(UGC-AUTONOMOUS)**  
**(AJ4517) OPERATING SYSTEMS**

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

**L T P C**  
**4 1 0 4**

**Objectives:**

- To understand main components of OS and their working
- To study the operations performed by OS as a resource manager
- To understand the different scheduling policies of OS
- To understand the different memory management techniques
- To understand process concurrency and synchronization
- To understand the concepts of input/ output, storage and file management
- To study different OS and compare their features.

**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, classic problems of synchronization, monitors, Synchronization examples, atomic transactions. Case studies UNIX, Linux, 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 from deadlock.

**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 7<sup>th</sup> 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.Dhamdhare “Operating systems- A Concept based Approach” 2<sup>nd</sup> Edition, TMH,ISBN:13:9780070611948
2. Andrew S Tanenbaum “Modern Operating Systems” 2<sup>nd</sup> 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.
6. Explain the various features of distributed OS like Unix, Linux, windows etc

**Learning outcomes:**

1. Apply optimization techniques for the improvement of system performance.
2. Ability to understand the synchronous and asynchronous communication mechanisms in their respective OS.
3. Learn about minimization of turnaround time, waiting time and response time and also maximization of throughput with keeping CPU as busy as possible.
4. Ability to compare the different OS

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

**(AJ4518) SOFTWARE ENGINEERING**

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

**L T P C**

**4 0 0 4**

**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.
6. To learn about the risk management, maintenance of the software product.

**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.

#### **Learning outcomes:**

1. Study a body of knowledge relating to Software Engineering, Software reengineering, and maintenance;
2. Understand the principles of large scale software systems, and the processes that are used to build them;
3. Have skills in the most widely used approach to software construction – object-orientation(OO), including OO requirement specifications, OO analysis, OO design, OO Programming, OO testing and maintenance.

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**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES  
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**(AJ4519) OPERATING SYSTEMS LAB**

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

**L T P C**

**0 0 3 2**

**Objectives:**

- To use Linux operating system for study of operating system concepts.
- To write the code to implement and modify various concepts in operating systems using Linux.

**List of Programs:**

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. FIFO
  - 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 7<sup>th</sup> 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.Dhamdhare “Operating systems- A Concept based Approach” 2<sup>nd</sup> Edition, TMH,ISBN:13:9780070611948



2. Andrew S Tanenbaum “Modern Operating Systems” 2<sup>nd</sup> 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, the use of virtual memory in modern operating systems as well as the structure of the most common file-systems.

**Learning Outcomes:**

1. The course objectives ensure the development of students applied skills in operating systems related areas.
2. Students will gain knowledge in writing software routines modules or implementing various concepts of operating system.

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

**(AJ4520) CASE TOOLS LAB**

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

**L T P C**

**0 0 3 2**

**Objectives:**

The aim of the course is to teach methods and techniques for analysis and design of information systems base on an object-oriented approach. The course will, furthermore, discuss a variety of perspectives of development of information systems in order explore the relationship between programming, data bases and software engineering. A project will be conducted with the aim to analyze and design an information system in a real-world organization. Concretely the course will teach:

1. Definition of problems, requirements specification and the relationship between the specification and the real-world
2. Systems specification, modeling and a superior functional design
3. A variety of systems development strategies

**Week-1 and 2**

Students are divided into batches of 5 each and each batch has to draw the following diagrams using UML for an ATM system whose description is given below.

UML diagrams to be developed are:

1. Use Case Diagram.
2. Class Diagram.
3. Sequence Diagram.
4. Collaboration Diagram.
5. State Diagram
6. Activity Diagram.
7. Component Diagram
8. Deployment Diagram.
9. Test Design.

**Description for an ATM System**

The software to be designed will control a simulated automated teller machine (ATM) having a magnetic stripe reader for reading an ATM card, a customer console (keyboard and display) for interaction with the customer, a slot for depositing envelopes, a dispenser for cash (in multiples of Rs. 100, Rs. 500 and Rs. 1000), a printer for printing customer receipts, and a key-operated switch to allow an operator to start or stop the machine. The ATM will communicate with the bank's computer over an appropriate communication link. (The software on the latter is not part of the requirements for this problem.)

The ATM will service one customer at a time. A customer will be required to insert an ATM card and enter a personal identification number (PIN) - both of which will be sent to the bank for validation as part of each transaction. The customer will then be able to perform one or more transactions. The card will be retained in the machine until the customer indicates that

he/she desires no further transactions, at which point it will be returned - except as noted below.

The ATM must be able to provide the following services to the customer:

1. A customer must be able to make a cash withdrawal from any suitable account linked to the card, in multiples of Rs. 100 or Rs. 500 or Rs. 1000. Approval must be obtained from the bank before cash is dispensed.
2. A customer must be able to make a deposit to any account linked to the card, consisting of cash and/or checks in an envelope. The customer will enter the amount of the deposit into the ATM, subject to manual verification when the envelope is removed from the machine by an operator. Approval must be obtained from the bank before physically accepting the envelope.
3. A customer must be able to make a transfer of money between any two accounts linked to the card.
4. A customer must be able to make a balance inquiry of any account linked to the card.
5. A customer must be able to abort a transaction in progress by pressing the Cancel key instead of responding to a request from the machine.

The ATM will communicate each transaction to the bank and obtain verification that it was allowed by the bank. Ordinarily, a transaction will be considered complete by the bank once it has been approved. In the case of a deposit, a second message will be sent to the bank indicating that the customer has deposited the envelope. (If the customer fails to deposit the envelope within the timeout period, or presses cancel instead, no second message will be sent to the bank and the deposit will not be credited to the customer.)

If the bank determines that the customer's PIN is invalid, the customer will be required to re-enter the PIN before a transaction can proceed. If the customer is unable to successfully enter the PIN after three tries, the card will be permanently retained by the machine, and the customer will have to contact the bank to get it back. If a transaction fails for any reason other than an invalid PIN, the ATM will display an explanation of the problem, and will then ask the customer whether he/she wants to do another transaction.

The ATM will provide the customer with a printed receipt for each successful transaction. The ATM will have a key-operated switch that will allow an operator to start and stop the servicing of customers. After turning the switch to the "on" position, the operator will be required to verify and enter the total cash on hand. The machine can only be turned off when it is not servicing a customer. When the switch is moved to the "off" position, the machine will shut down, so that the operator may remove deposit envelopes and reload the machine with cash, blank receipts, etc.

#### **Week - 3 and 4**

##### **Airline Ticket Reservation**

**Introduction:** The manual system of ticket reservation takes more time and the number of reservations per day is limited. To increase the efficiency of the process, we go for online ticket reservation system. This system supports online ticket booking.

##### **Problem statement**

This system is built for user to directly access the system online to book tickets. The user can book, print, delete tickets without the help of a clerk. The administrator has control over the adding flights available for booking and has control over deleting flights that are not necessary. The administrator and user can both enter the system using their respective login details

## **System requirements**

Microsoft visual basic 6.0 is used as the front-end for our project and msaccess is used as the back-end.

## **Use-case diagram**

The online ticket reservation system uses the following use cases:

1. Login
2. Book ticket
3. Print ticket
4. Cancel ticket
5. View flight
6. Add flight
7. Delete flight
8. Logout

## **Actors involved**

- 1) Administrator
- 2) Passenger

### **Use-case name: login**

The user enters a username and a password. And if the entered details are valid, the user's details are brought to the screen; if they are invalid then an appropriate message is displayed.

### **Use-case name: Book ticket**

The user is allowed to book a ticket on the flight he requires and the date and time as is necessary for the user. The user has to provide details such as name, flight number, date of travel, departure time, and can view the price of the ticket.

### **Use-case name: Print ticket**

The user after booking a ticket can print a copy of the ticket reserved. The user has to provide the details about ticket number for searching in the database and passenger name for confirming passenger identity.

### **Use-case name: Cancel ticket**

A passenger can decide to cancel a ticket after the ticket is booked. The passenger has to provide details about ticket for searching and details about him for confirmation of identity.

### **Use-case name: View flight**

The passenger can view the flights available in the database for deciding which flight's ticket he wishes to book. The passenger can view the details of flights such as, flight number, Flight Company, price, departure and arrival times.

### **Use-case name: Add flight**

Only the administrator has privilege to add flights. The administrator can add the flight on which tickets can be booked by the passengers. The administrator has to provide details about a new flight such as flight number, flight company name, price, departure time, date of travel.

### **Use-case name: Delete flight**

The administrator also has the privilege to delete flights that are not necessary. The administrator has to provide details about the flight for searching and inform any passengers that have booked tickets on the flight about the change and make necessary arrangements.

### **Use-case name: Logout**

After the necessary operations have been performed on the system, the user can choose to logout from the system

## **Week - 5 and 6**

### **Course Registration System**

#### **Aim**

To create a system through which students can register to the courses desired by them.

#### **Problem statement**

The system is built to be used by students and managed by an administrator. The student and employee have to login to the system before any processing can be done. The student can see the courses available to him/her and register to the course he /she wants. The administrator can maintain the course details and view all the students who have registered to any course.

#### **Use-case diagram**

The course registration system has the following use-cases

Login

View course details

Registration

Display details

Maintain course details

Logout

#### **The actors involved in the system are**

1. Student
2. Administrator

#### **Use-case name: Login**

The user enters the username and password and chooses if the user is student or administrator. If entered details are valid, the user's account becomes available. If it is invalid, an appropriate message is displayed to the user.

#### **Use-case name: View course details**

In this use case, a student can search all the courses available to him/her and choose the best course the user wants. The student can view the course duration, faculty and department of the courses he may choose.

#### **Use-case name: Registration**

When a student has successfully chosen a course, he/ she can register to that course. Upon registration, the student's details are stored in the database.

#### **Use-case name: Display details**

After registration to any course, the student may see the details of his current course. He/She may wish to know details about fees and other information. The administrator also has the privilege to display details of the the students and the corresponding course for which they have registered.

#### **Use-case name: Maintain course details**

The administrator has to perform the duties of maintaining the course details. Any change to the course structure is maintained by the administrator.

**Use-case name: Logout**

After all the desired transactions are made, the user may choose to logout from the system to save all the changes they have made.

**Week -7 And 8**

Library management system

The uml class diagram describes the structure of system by showing the system classes, attributes, methods and associations between classes.

UML Class diagram for library management system contains classes such as

- 1.Book class
- 2.librarian class
3. Transaction class
- 4.Member record class
- 5.Bill class

Each class contains various attributes and methods (Functions) which call other class attributes to share data.

1. Book Class contains attributes such as author, book name, price status, rack no, edition.  
And functions such as display book details, update status.
2. Librarian class contains attributes such as name, password and functions such as search book, issue book, calculate fine, calculate bill.
- 3.transaction class contains attributes such as transaction id ,member id bill id date of issue etc. and functions such as create transaction delete transaction
- 4.Member record class contains attributes such as member id,type,date of issue, no of books,etc. and functions such as increase book issue, decrease book issue, pay bill.
5. Bill class contains attributes such as bill no,date,member,amount and functions such as create bill, update bill.

**Week- 9 And 10****School Management System**

UML Use Case diagram for School Management System is shown below. The various participants of the same are detailed below:-

**Actors:** - Admin, Teacher, Students

the corresponding use cases for these actors are:-

1. **Admin:** Login, Logout, Add Teachers, Add Students, Add Class, Add Divisions, Add Subjects, Modify/Delete Teachers, Modify/Delete Students, Modify/Delete Class, Modify/Delete Divisions, Modify/Delete Subjects
2. **Teacher:** Mark Attendance, Prepare Test Paper, Check Papers, Prepare Report Cards, Declare Result
3. **Student:** Fill Admission Form, Get Enrolled, Write Exams

## Week- 11 And 12

### Online Job Portal

UML Use Case diagram for Online Job Portal System is shown below. The various participants of the same are detailed below:-

**Actors:** - Admin, Visitors, Registered Job Seekers, Employers

the corresponding use cases for these actors are:-

1. **Admin:** Approve New Companies, Maintain Website, Approve New Vacancies, Track Job Seekers, Delete Companies
2. **Visitors:** Search For Vacancies, Get Registered
3. **Registered Job Seekers:** Login, Upload CV, Update CV, Modify Settings, View Vacancies, Apply For Job, Change Password
4. **Employers:** Get Registered, Login, Add new Vacancies, Delete Vacancies, Update Details, Send Notification to Job Seekers According to their interest Area, Download CV, Change Password

Here we have some dependencies also like Login of Registered Job Seekers <<include>> View Vacancies. This is so because as the job seeker gets logged in by default some of the vacancies matching his profile are displayed. Then, view vacancies <<extend>> Apply for job as he may or may not apply for job.

Again Login <<extend>> Upload CV, Modify Settings and Change Password as user may or may not do any of these task after getting logged in.

Now Employers Login <<extend>> Change Password, Delete Vacancies, Add New Vacancies, Download CV, Update Details, Send Notification to Job Seekers. This is so because this is not certain what employer would like to do after getting logged in. Any of these tasks he may or may not do.

### REFERENCE BOOKS:

1. Grady Booch, James Rum Baugh, Ivar Jacobson, "The Unified Modeling Language User Guide," 2 ed, Pearson Education, 2009
2. Hans-Erik Eriksson, Magnus Penker, Brian Lyons, David Fado, "UML 2 Toolkit," WILEY-Dreamtech India Pvt. Ltd., 2003.
3. Meilir Page-Jones, "Fundamentals of Object Oriented Design in UML," Pearson Education, 2000.
4. Pascal Roques, "Modeling Software Systems Using UML2," WILEY-Dreamtech India Pvt. Ltd, 2004.

**WEB LINKS:**

1. <http://nptel.iitm.ac.in>
2. [http://ebookey.org/dl/Web-Programming-building-internet-applications-Chris-Bates-2nd-Edition- WILEY-Dreamtech](http://ebookey.org/dl/Web-Programming-building-internet-applications-Chris-Bates-2nd-Edition-WILEY-Dreamtech)
3. [http://ebookey.org/Java-Server-Pages-Hans-Bergsten-SPD-O-Reilly-pdf-repost-mediafire-link\\_1227500.html](http://ebookey.org/Java-Server-Pages-Hans-Bergsten-SPD-O-Reilly-pdf-repost-mediafire-link_1227500.html).
4. [www.amazon.com](http://www.amazon.com) > ... > [Software Engineering](#) > [Methodology](#).
5. <http://nptel.iitm.ac.in>
6. [www.pearsonhighered.com](http://www.pearsonhighered.com) > ... > [Unified Modeling Language \(UML\)](#)

**Course Outcomes:**

1. After successful completion of the course student will be able to
2. Apply Unified Modeling Language to design software system.
3. Analyze the static and dynamic aspects of software system.
4. Model the design for given set of requirements.
5. Develop UML models for real world applications.

Case studies given below should be Modeled using Visual Modeling tools in different views i.e Use case view, logical view, component view, Deployment view.

**Learning Outcomes:**

After the course, students should:

1. be able to use an object-oriented method for analysis and design
2. be able to analyze information systems in real-world settings and to conduct methods such as interviews and observations
3. have a general understanding of a variety of approaches and perspectives of systems development, and to evaluate other IS development methods and techniques
4. know techniques aimed to achieve the objective and expected results of a systems development process
5. know different types of prototyping
6. know how to use UML for notation

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**JAYAMUKHI INSTITUTE OF TECHNOLOGICAL SCIENCES**  
**(UGC-AUTONOMOUS)**  
**Narsampet, Warangal-506332(T.S)**

II Year B. Tech, II Semester All Branches

**L T P C**  
**0 0 3 -**

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

**Objectives of the Course:**

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

**Learning Outcomes:**

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

## **Unit – I**

### **UNDERSTANDING GENDER:**

**Gender: Why should we study it? (Towards a world of Equals: Unit – 1)**

**Socialization: Making women, making men (Towards a World of Equals: Unit – 2)**

Introduction. Preparing for Womanhood. Growing up Male. First lessons in Caste. Different Masculinities.

**Just Relationships: Being Together and Equals (Towards a World of Equals: Unit – 12)**

**Mary Kom and Onler.** Love and Acid just do not Mix. Love Letters. Mothers and Fathers. Further Reading: Rosa Parks – The Brave Heart.

## **Unit – II**

### **GENDER AND BIOLOGY:**

**Missing Women: Sex Selection and its Consequences (Towards a World of Equals: Unit – 4)**

Declining Sex Ratio. Demographic Consequences.

**Gender Spectrum: Beyond the Binary (Towards a World of Equals: Unit – 10)**

Two or Many? Struggles with Discrimination.

Additional Reading: **Our Bodies, Our Health (Towards a World of Equals: Unit – 13)**

## **Unit – III**

### **GENDER AND LABOUR:**

**Housework: the Invisible Labor (Towards a World of Equals: Unit – 3)**

“My Mother doesn’t Work”. \*Share the Load\*.

**Women’s Work: Its Politics and Economics (Towards a World of Equals: Unit – 7)**

Fact and Fiction. Unrecognized and Unaccounted work.

Further Reading: Wages and Conditions of Work

## **Unit – IV**

### **ISSUES OF VIOLENCE:**

**Sexual Harassment: Say No! (Towards a World of Equals: Unit – 6)**

Sexual Harassment, not Eve – teasing – Coping with Everyday Harassment – Further

Reading: “Chupulu” **Domestic Violence: Speaking Out (Towards a World of Equals: Unit – 8)**

Is Home a Safe Place? – When Women Unite [Film]. Rebuilding Lives. Further Reading. New Forums for justice.

**Thinking about Sexual Violence (Towards a World of Equals: Unit – 11)**

Blaming the Victim – “! Fought for my Life .....” – Further Reading. The Caste Face of Violence.

## **Unit – V**

### **GENDERS STUDIES:**

**Knowledge: Through the Lens of Gender (Towards a World of Equals: Unit – 5)**

Point of View. Gender and the Structure of Knowledge. Further Reading. Unacknowledged Women Artists of Telangana

## **Whose History? Questions for Historians and Others (Towards a World of Equals: Unit – 9)**

Reclaiming a Past. Writing other Histories. Further Reading. Missing Pages from Telangana History.

**Essential Reading:** All the Units in the Text books, “Towards a World of Equals: A Bilingual Textbook on Gender” Written by A. Suneetha, Uma Bhrugubanda, Duggirala Vasanta, Rama Melkote, Vasudha Nagaraj, Asma Rasheed, Gogu Shyamala, Deepa Sreenivas and Susie Tharu.

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

### **Reference Books:**

1. Sen, Amartya. “More than Once Million Women are Missing”. New York Review of Books 37.20 ( 20 December 1990). Print. ‘We Were Making History.....’ Life Stories of Women in the Telangana People’s Struggle. New Delhi : Kali for Women, 1989.
2. Gautam, Liela and Gita Ramaswamy. “A ‘Conversation’ between a Daughter and Mother”. Broadsheet on Contemporary Politics. Special Issue on Sexuality and Harassment: Gender Politics on Campus Today. Ed. Madhumeeta Sinha and Asma Rasheed. Hyderabad: Anveshi research Center for Women’s Studies, 2014.
3. Abdulali Sohaila. “ I Fought For My Life...and Won.” Available online at: <http://www.thealternative.in/lifestyle/i-fought-for-my-life-and-won-sohaila-abdulali/>
4. Jeganathan Pradeep, Partha Chatterjee (Ed). “Community, Gender and Violence Subaltern Studies XI”. Permanent Black and Ravi Dayal Publishers, New Delhi, 2000
5. K. Kapadia. The Violence of Development: The Politics of Identity, Gender and Social Inequalities in India. London: Zed Books, 2002.
6. S. Benhabib. Situating the self: Gender, Community, and Postmodernism in Contemporary Ethics, London: Routledge, 1992.
7. Virginia Woolf A Room of One’s Oxford: Black Swan. 1992.
8. T. Banuri and M. Mahmood, Just Development: Beyond Adjustment with a Human Face, Karachi: Oxford University Press, 1997.
9. Tripti Lahiri. “By the Numbers: Where India Women Work.” Women’s Studies Journal (14 November 2012) Available online at: <http://blogs.wsj.com/India/real-time/2012/11/14/by-the-numbers-where-indian-women-works/>
10. K. Satyanarayana and Susie Tharu (Ed.) Steel Nibs Are Sprouting: New Dalit Writing From South India, Dossier 2: Telugu And Kannada <http://harpercollins.co.in/BookDetail.asp?BookCode=3732>
11. Vimala “Vantilu (The Kitchen)”. Omen Writing in India: 600BC to the Present, Volume II The 20th Century. Ed. Susie Tharu and K. Lalita. Delhi: Oxford University Press, 1995. 599-601.
12. Shatrughna, Veena et al. Women’s Work and its Impact on Child Health and Nutrition, Hyderabad, National Institute of Nutrition, India Council of Medical Research 1993.
13. Stress Shakti Sanghatana. “We Were Making History....’Life Stories of Women in the Telangana People’s Struggle. New Delhi: Kali of Women, 1989.

14. Menon, Nivedita. *Seeing Like a Feminist*. New Delhi. Zubaan-Penguin Books, 2012.
15. Jayaprabha, A. "Chupulu (Stares)". *Women Writing in India: 600BC to the Present. Volume II: The 20th Century* Ed. Susie Tharu and K. Lalita. Delhi: Oxford University Press, 1995. 596-597.
16. Javeed, Shayam and Anupam Manuhaar. "Women and Wage Discrimination in India: A Critical Analysis". *International Journal of Humanities and Social Science Invention* 2, 4(2013).