AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)
Gudur, Nellore Dist - 524101, A.P (India)

ACADEMIC REGULATIONS

B.Tech (Regular) Four Year Degree Programme

(Applicable for the batches admitted from the academic year 2013-14 and B.Tech Lateral Entry Scheme from the academic year 2014-15)

1. INTRODUCTION:

Academic Programmes of the institute are governed by rules and regulations approved by the Academic Council, which is the highest Academic body of the Institute. These academic rules and regulations are applicable to the students admitted from the academic year 2013-14 onwards into four year B.Tech Programmes.

Audisankara College of Engineering & Technology shall follow Year-wise pattern for First year courses and Semester pattern for II, III and IV year courses of all B.Tech Programmes being offered. An academic year for semester pattern shall consist of two semesters (I & II Semesters) from the second year onwards of each B.Tech Programme.

2. DURATION OF THE PROGRAMME:

The duration of the UG Programme is for four academic years. A student is permitted to complete the B.Tech Programme in a stipulated time frame of Eight consecutive years from the joining Academic Year. Students joining the B.Tech Programme in the first semester of second year directly through Lateral Entry Scheme (LES) shall have to complete the Programme in a stipulated time frame of Six consecutive years from the joining Academic Year. Otherwise they shall forfeit their seat in B.Tech Programme and their admission shall stand cancelled.

3. MINIMUM INSTRUCTION DAYS:

The first year of four year B.Tech Programme shall have a minimum of 180 instruction days and from second year onwards each semester shall have 90 instruction days with atleast 100 contact hours per each theory subject for yearly pattern and 50 for semester pattern. However, contact hours are generally three for a practical subject per week.

4. PROGRAMMES OFFERED (UNDER GRADUATE LEVEL):

Currently Audisankara College of Engineering & Technology is offering,

B.Tech Under Graduate Programmes in the following Engineering disciplines:

- Civil Engineering (**CE**)
- Electrical and Electronics Engineering (**EEE**)
- Mechanical Engineering (**ME**)
- Electronics and Communication Engineering (**ECE**)
- Computer Science and Engineering (**CSE**)

5. ELIGIBILITY CRITERION FOR ADMISSION:

5.1 ADMISSION CATEGORY:

Admissions are made under two categories for B.Tech (Regular) Programmes.

The eligibility criterion for admission into 1st year B.Tech. (Regular) Programme shall be as mentioned below:
Admissions in each Programme in the Institution are classified into

- **CATEGORY-A : (EAMCET Convener Quota)**
- **CATEGORY-B : (NRI/Management)**
- Admissions are made as per the guidelines of A.P State Council of Higher Education (APSCHE), Government of Andhra Pradesh.

5.2 LATERAL ENTRY CATEGORY:

The candidates having passed the qualifying exam (B.Sc., Graduation & Diploma holders) shall be admitted into the II year I Semester directly, based on the rank secured by the candidate at Engineering Common Entrance Test (ECET (FDH)) in accordance with the instructions received from the Convener, ECET and APSCHE. The candidate shall also satisfy any other eligibility requirements stipulated by the JNTUA, Anantapur and / or the Government of Andhra Pradesh from time to time.

6. COURSE STRUCTURE:

Each Programme of study shall consist of:

- General Courses: Humanities and Social Sciences: (5 to 10%)
- Basic Sciences: (15 to 20%)
- Engineering Sciences: (15 to 20%)
- Professional Subjects - Core :(50 to 60%)
- Professional Subjects - Electives: (10 to 15%)
- Personality Development Courses: (1%)

7.0 CONTACT PERIODS AND CREDITS:

Depending upon the complexity and volume of the course, the number of contact periods per week will be assigned. The Course Credits are broadly fixed based on the following norms:

- Lectures – One Lecture period per week is assigned one credit.
- Tutorials - Two tutorial periods per week are assigned one credit.
- Practical – 3 periods per week are assigned two credits.
- Practical course/ Personality Development course/ Technical Seminars/ Comprehensive Viva-Voce shall have 2 credits each in semester.
- Project Work Phase-I shall have 2 credits.
- Project Work Phase-II shall have 10 credits.
- However, some courses are prescribed with fixed number of credits depending on the complexity of the subject and relative importance.

7.1 Theory / Tutorial classes:

Each course is prescribed with a fixed number of lecture periods per week. During each lecture period, the course instructor shall deal with the concepts of the course content with the required analysis and applications. For certain courses, tutorial periods are prescribed in order to give exercises to the students and to closely monitor their learning ability and achievement to strengthen the subject knowledge.

7.2 Laboratory / Workshop Courses:

A minimum prescribed number of experiments / jobs / programs in each of these courses have to be performed by the students, who shall complete these in all respects and get each experiment evaluated by teacher concerned and certified by the Head of the Department concerned at the end of the year/ semester.

7.3 Programme Credits:

Each discipline of the B.Tech (Regular) Programme is designed to have a total of 200 credits, and the student shall have to complete the courses and earn all the credits to get B.Tech degree awarded.

However, B.Tech (Lateral Entry Scheme) student shall have to acquire 154 credits for the degree to be awarded.

7.4 Scheme of Instruction for 1st, 2nd, 3rd and 4th Years

The scheme of instruction and syllabi of all B.Tech Programmes are given separately.

8. EXAMINATIONS AND SCHEME OF EVALUATION:

8.1 INTERNAL EXAMINATIONS:

8.1.1 Theory Courses:

Each course is evaluated for **30** marks (**a+b+c**).

a) **5 marks** in each theory course shall be given to those students who put in attendance of that subject in a graded manner as given in Table 1. This incentive is aimed to motivate the students to become regular and not to miss instruction classes.

Table 1: Attendance based marks system

S. No	Attendance Range	Marks Awarded
1	Attendance of 75% and above but less than 78%	2 Marks
2	Attendance of 78% and above but less than 80%	3 Marks
3	Attendance of 80% and above but less than 90%	4 Marks
4	Attendance of 90% and above	5 Marks

b) (i) **Yearly Pattern:** For I B.Tech (Yearly pattern) there shall be three midterm examinations each for **20 marks** and 90 minutes duration in each theory subject as per the academic calendar announced in advance giving a test performance weightage of 80% for the highest test score and 20% for the average of remaining two midterm examinations for a total of 20 marks. Internal marks are awarded by conducting three midterm examinations as mentioned below:

- Midterm-I is designed and conducted covering first unit of syllabus.
- Midterm-II is conducted covering unit –II and half of unit-III contents.
- Midterm-III is conducted covering second half of unit-III and unit-IV contents.

ii) **Semester Pattern:** Two midterm examinations each for **20 marks** with the duration of 90 minutes each will be conducted for every theory course in a semester. The midterm marks shall be awarded giving a weightage of 80% in the midterm examination in which the student scores more marks and 20% in the remaining midterm examination.

Internal Examination Pattern for 20 Marks:

- Each Internal Examination Question Paper comprises of three questions covering the two units.
- Answering all the three questions is compulsory.
- Question 1 contains six one mark questions covering three questions from each unit and student has to answer four questions (4 Marks).
- Question 2 is from one unit and question 3 from the other unit. Questions 2 & 3 will have internal choice (Either/or). Each question is allotted 8 Marks.

c) **5 marks** are allocated for **Assignment tests.**

- There will be four Assignment tests per subject in year/semester pattern.
- One Assignment test is conducted from each unit.
- Five Assignment questions are given in advance from each unit out of which two questions given by the concerned teacher has to be answered during Assignment test.
- Average of Assignment tests marks is considered.

NOTE: A student who is absent for any Mid Term Examination/ Assignment Test, for any reason whatsoever, shall be deemed to have scored zero marks in that Mid Term Exam/ Assignment Test and no make-up test shall be conducted.

8.1.2 Drawing Subjects:

For subjects such as Engineering Drawing/ Building Drawing etc. the distribution of internal marks is as given below:

Table 2: Distribution of Internal Marks

Sl. No.	Criterion	Marks
1	Attendance	5
2	Day - to - Day Evaluation	10
3	Internal Examination	15

a) Engineering Drawing (Yearly pattern):

Three internal tests are conducted spanned at equal intervals. Test performance weightage of 80% for the highest test score and 20% for the average of remaining two midterm examinations for a total of 15 marks. Internal marks are awarded by conducting three midterm examinations as mentioned below:

- Midterm-I is designed and conducted covering first unit of syllabus.
- Midterm-II is conducted covering unit –II and half of unit-III contents.
- Midterm-III is conducted covering second half of unit-III and unit-IV contents.

b) Building Drawing etc., (Semester pattern):

Two internal tests are conducted spanned at equal intervals. Test performance weightage of 80% for the highest test score and 20% for the average of remaining midterm examination for a total of 15 marks. Internal marks are awarded by conducting two midterm examinations as mentioned below:

- Midterm-I is designed and conducted covering first unit of syllabus.
- Midterm-II is conducted covering the second unit of syllabus.

8.1.3 Laboratory Courses:

For Laboratory courses there shall be continuous evaluation during the year/semester for 30 internal marks. The break-up of internal marks to be awarded is as given below:

Table 3: Break-up of Internal Marks

Sl. No.	Criterion	Marks
1	Attendance	5
2	Conduct of experiments, Observation & Results in regular class work(Day-to-Day Performance)	15
3	Viva – voce and Internal Examination	10

In any semester a minimum of 90% of prescribed number of experiments/exercises specified in the syllabus for laboratory course shall be conducted. They shall complete these experiments/exercises in all respects and submit and get the record certified by the concerned internal lab teacher and the Head of the Department to become eligible to appear for the final end examination in the Laboratory Course.

8.1.4 Technical Seminar:

There shall be two Technical Seminars conducted in each discipline, Technical Seminar-I in the II B.Tech II semester and the Technical Seminar-II in the III B.Tech II semester. The distribution of internal marks for component of Technical seminar is given below:

Table 5: Distribution of Marks for component of Technical seminar

Sl. No.	Criterion	Marks
1	Seminar Report & Subject content	20
2	Seminar presentation & Viva – Voce Exam	30

A Technical Seminar shall have two components, one chosen by the student from the course work as an extension and approved by the faculty supervisor. The other component is suggested by the supervisor and can be a reproduction of the concept in any standard research paper or an extension of concept from earlier course work. A hard copy of the information on seminar topic in the form of a report is to be submitted for evaluation along with presentation. The presentation of the seminar topics shall be made before a committee consisting of Head of the department, seminar supervisor and a senior faculty member. Each Technical Seminar shall be evaluated for 100 marks. Technical Seminar component-I for 50 marks and component-II for 50 marks making total 100 marks. (**Distribution of marks for 50:** 10 marks for report, 10 marks for subject content, 20 marks for presentation and 10 marks for queries).

8.1.5 Comprehensive Viva-Voce:

There shall be a Comprehensive Viva-Voce in IV B.Tech II Semester. The comprehensive Viva-Voce shall be evaluated in the topics covering the core aspects of the concerned discipline in which the candidate is likely to get graduated. The marks can be awarded based on the performance in viva-voce examination conducted by a committee consisting of **i)** Head of the Department **ii)** Two Senior Faculty members of the department **iii)** External Examiner appointed by the Principal. The comprehensive Viva-Voce shall be conducted for 100 marks. Of the 100 marks, 25 marks are allocated to each member of the committee.

8.1.6 Project Work:

The Project work is spread over to two semesters having Project Work Phase-I and Project Work Phase-II. Project Work Phase-I is included in IV B.Tech I Semester and Project Work Phase-II in IV B.Tech II Semester as detailed below:

A student has to select topic of his Project Work based on his interest and available facilities, in the IV B.Tech I semester which he will continue through IV B.Tech II semester also.

Project Work Phase-I: IV Year I Semester

The object of Project Work Phase-I is to enable the student to take up investigative study in the broad field of his branch of Engineering, either fully theoretical/practical or involving both theoretical and practical work to be assigned by the department on an individual basis or three/four students in a group under the guidance of a supervisor/ guide. This is expected to provide a good initiation for the student(s) in R&D work.

The assignment normally includes:

- Survey and Study of published literature of on the assigned topic.
- Working out a preliminary approach to the problem relating to the assigned topic.
- Conducting preliminary analysis/ modeling/simulation/experiment/ design/ feasibility.
- Preparing a written report on the study conducted for presentation to the department.
- Final seminar presentation before Project Review Committee.

The supervisor/ guide will evaluate the execution of the project periodically.
Project Work Phase-I is allocated 100 marks with 2 credits. Out of 100, 25 marks are allocated for the supervisor/guide to be awarded based on periodical project reviews and submission of the report on the work done. 25 marks are allocated for the supervisor/guide and head of the department to be awarded based on seminar given by each student on the topic of the project. The other 50 marks shall be awarded on the basis of his presentation on the work done on his project by the Departmental committee comprising of Head of the Department, respective supervisor/ guide and two senior faculty of the department appointed by the Principal.
The candidate is declared to have passed in Project work Phase-I when he gets 40% marks given by the Departmental Committee and 50% marks overall.

Project Work Phase-II: IV Year II Semester:

The Project work Phase-II will be an extension of Phase-I project work. The object of Project work phase-II is to enable the student to extend further the investigative study taken up as the project in Phase-I under the guidance of the supervisor/ guide from the department.

The assignment normally includes:

- Preparing an action plan for conducting the investigation including the team work.
- In depth study of the topic assigned.
- Review and finalization of the approach to the problem relating to the assigned topic.
- Final development of product/process, testing, results, conclusions and further direction.
- Preparing a paper for conference presentation/ publication in journal if possible.
- Preparing a dissertation in the standard format for being evaluated by the department.
- Final presentation of the work done before the Project Review Committee (PRC).

Project Work Phase-II is allocated 50 internal marks. Out of 50, 25 marks are allocated for the supervisor/guide and head of the department to be evaluated based on two seminars given by each student on the topic of the project. The other 25 marks shall be evaluated on the basis of his presentation on the work done on his project by the Departmental Committee comprising of Head of the Department, respective supervisor/ guide and two senior faculty of the department appointed by the Principal.

8.1.7: Professional Ethics and Human Values / Qualitative and Quantitative Analysis:

The subject **Professional Ethics and Human Values** is included in the B.Tech Programme under mandatory and a theory course. It is treated equivalent to any other professional theory subject but only internal evaluation.

The other subject **Qualitative and Quantitative Analysis** is introduced in to the B.Tech Programme to equip with the necessary skill sets and to enhance the placement opportunities of students. It is also a theoretical subject equivalent to any other professional theory subject but only internal evaluation.

8.1.8: Mandatory Courses:

a) A Mandatory Course is one among the compulsory courses and does not carry any credits and is compulsory with examination (internal evaluation only). List of the mandatory courses will be notified at the beginning of the II B.Tech I Semester for all students and the student has to choose one mandatory course for self study mode/with class work at the beginning of the II B.Tech I Semester. All the students (regular & lateral entry students) shall complete one of the mandatory courses, with acceptable performance. The indicative list of the mandatory courses is given below.

1. Intellectual Property Rights – 13MA301
2. Sociology & Elements of Indian History for Engineers – 13MA302
3. Energy Studies – 13MA303
4. Rural Development – 13MA304
5. Law for Engineers – 13MA305
6. Clinical Psychology – 13MA306
7. Business Communication – 13MA307

b) Mandatory courses will be evaluated by conducting examination for duration of 90 minutes.

c) Students will have two chances every academic year to clear the mandatory course beginning from the II B.Tech I Semester. Further, the student has an option to change the mandatory course in case if he / she is unable to clear the mandatory course in the first two chances. However, provisional pass certificate of B.Tech degree will be issued only, when the student clears the mandatory course. Its result shall be declared with **"PASS"** or **"FAIL"** performance and included in the marks memorandum. Each student has to get **"PASS"** in the mandatory course prescribed to qualify for the award of degree.

8.1.9: Audit Courses:

a) A student can register for courses for audit only, when interested to supplement his /her knowledge and / or skills. These courses are optional and there will be no examination. The audit courses shall not be taken into account in determining the student's academic performance in any semester. They will be notified separately by the department. It is optional for students to register for these courses and seek their inclusion in marks memorandum (but not for earning credits). Courses in this category are technology oriented but not necessarily focused on the discipline under study.

8.2 YEAR / SEMESTER END EXAMINATIONS:

8.2.1 Theory Courses: 70 marks each:

The Year/ Semester end examination in each theory subject shall be conducted for 3 hours duration at the end of the year/semester for 70 marks. The question paper each theory subject for Year/Semester pattern shall be designed as per the following guidelines:

- Contains a total of nine questions.
  - A total of NINE questions.
  - Answer one Question from each Unit
  - The Eight questions are to be designed taking one question from each unit (Unit Wise Either or Type) of the four units.
  - In each question, one, two or more bits can be set, totaling 14 Marks with appropriate distribution of marks.
  - Question No.9 containing of 14 one mark questions. A minimum of three one – mark questions shall be set from each unit of the four units.

A student has to secure not less than a minimum of 35% of marks (25 marks) exclusively at the end year/semester examinations in each of the theory subjects in which the candidate had appeared. However, the candidate shall have to secure a minimum of 40% of marks (40 marks) in both external and internal components put together to become eligible for passing in the subject.

8.2.2 Engineering Drawing:

The syllabus of Engineering Drawing subject comprises of four units. The end examination in Engineering Drawing shall be conducted for 3 hours duration at the end of the year. The question paper shall be designed in the following pattern:

- Question paper contains a total of nine questions.
  - Answer one Question from each Unit
  - The Eight questions are to be designed taking one question from each unit (Unit Wise Either or Type) of the four units.
  - In each question, one, two or more bits can be set, totaling 14 Marks with appropriate distribution of marks.
  - Question No.9 containing of 7 two mark questions. A minimum of two two – marks questions shall be set from unit-I, II & III of the four units.

A student has to secure not less than a minimum of 35% of marks (25 marks) exclusively at the end year/semester examinations in each of the subjects in which the candidate had appeared. However, the candidate shall have to secure a minimum of 40% of marks (40 marks) in both external and internal components put together to become eligible for passing in the subject.

8.2.3 Lab Courses (Practical / Workshop): 70 marks

Out of 70 marks **50** marks are allocated for experiment (procedure for conducting the experiment carries 15 marks & readings, calculation and result-35) and **15** marks for viva-voce examination with **5** marks for the record.

Each Year/Semester External Lab Examination shall be evaluated by an Internal Examiner along with an External Examiner appointed by the Principal.
A candidate shall be declared to have passed in individual lab course if he secures a minimum of 50% aggregate marks (50 marks) (Internal & year/semester External Examination marks put together), subject to a minimum of 40% marks (28 marks) in the year/semester external examination.

8.2.4 Project Work Phase-II:

The semester end examination for project work done during IV B.Tech I semester and IV B.Tech II semester for 150 marks shall be conducted by a Project Review Committee (PRC). The committee comprises of an External Examiner appointed by the Principal, Head of the Department and Project Guide/Supervisor. The evaluation of project work shall be conducted at the end of the II Semester of IV B.Tech. The above committee evaluates the project work report with weightages of 50% of the marks (50 marks) awarded by external examiner, 20% of marks (20 marks) awarded by HOD & 30% of the marks (30 marks) by Project Guide/Supervisor respectively for a total of 100marks. Of the 50 marks for Presentation & Viva-Voce examination, HOD evaluates for 10 marks and external examiner for 40 marks. The evaluation of 150 marks is distributed as given below:

Table 11: Distribution of Project Work Marks

Sl. No.	Criterion	Marks
1	Report	100
2	Presentation & Viva – Voce	50

A candidate shall be declared to have passed in project work phase-II if he secures a minimum of 50% aggregate marks (100 marks) (Internal marks + External project marks), subject to a minimum of 40% marks (60 marks) in the project end examination.

9. YEAR/SEMESTER – WISE DISTRIBUTION OF CREDITS:

Table 12: Year/Semester –wise Credits distribution

YEAR/SEMESTER	No. of Credits for courses per year/semester Theory+ Lab/Drg/Proj/CVV/Semi	Total credits
I year	30+16	46
II year I semester	18+08	26
II year II semester	18+08	26
III year I semester	18+08	26
III year II semester	18+08	26
IV year I semester	18+08	26
IV year II semester	12+12	24
TOTAL CREDITS	200	200

(i) In first year the course of study consists of 6 theory subjects + Engineering Drawing + 4 laboratories and from second year onwards, each semester the course of study consists of 6 theory subjects + 3 laboratories. However, in the IV year II semester, there shall be only 4 theory subjects in addition to the project work and comprehensive viva – voice examination.

(ii) All the Technical Seminars, Professional Ethics & Human Values and Aptitude, Arithmetic Reasoning & Comprehension are credit based**.**

10. ATTENDANCE REGULATIONS AND CONDONATION:

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

(ii) Condonation of shortage of attendance in aggregate up to 10% on medical grounds (65% above and below 75%) in each semester may be granted on the recommendation of the College Academic Committee. However, granting condonation is purely at the discretion of Principal of the college.

(iii) A Student will not be promoted to the next semester unless he satisfies the attendance requirement of the present semester as applicable. They may seek re-admission for that semester as and when offered next.

(iv) Shortage of Attendance below 65% in aggregate shall in no case be condoned.

(v) Students whose shortage of attendance is not condoned in any semester are not eligible to take their end examinations of that particular semester and their registration for examination shall stand cancelled.

(vi) A stipulated fee shall be payable towards condonation of shortage of attendance if granted.

(vii) Attendance may also be condoned for those students who participate in prestigious sports and co and extracurricular activities provided their attendance is in the minimum prescribed range for the purpose and recommended by the concerned authority.

(viii) Attendance in Project Work Phase-II in IV B.Tech II Semester is not included in the calculation of final attendance. However, the student has to accquire 75% of attendance aggregate other than attendance of Project Work Phase-II in IV B.Tech II Semester.

11. MINIMUM ACADEMIC REQUIREMENTS:

The following academic requirements have to be satisfied in addition to the attendance requirements mentioned in item no.10.

A student shall be deemed to have satisfied the minimum academic requirements and earned the credits allotted to each theory/drawing subject if he secures not less than a minimum of 35% of marks exclusively at the end year/semester examinations in each of the subjects in which the candidate had appeared. However, the candidate shall have to secure a minimum of 40% marks in both external and internal components put together to become eligible for passing in the subject.

1. A candidate shall be declared to have passed in individual lab/project course if he secures a minimum of 50% aggregate marks (Internal & year/semester end examination marks put together), subject to a minimum of 40% marks in the year/semester end examination.
2. A student shall be promoted to next semester, if he satisfies the minimum attendance requirement.
3. A Student shall be promoted from II year to III year, if he fulfills the academic requirements of securing a minimum of 36 credits from:
   a) One regular and one supplementary examination of I Year.
   b) One regular examination of II Year I Semester.

4. A student shall be promoted from III year to IV year if he fulfills the academic requirements of securing a minimum of 62 credits from:
   a) Two regular and two supplementary examinations of I Year.
   b) Two regular and one supplementary examinations of II Year I Semester.
   c) One regular and one supplementary examinations of II Year II Semester.
   d) One regular examination of III Year I Semester.

   Irrespective of whether the candidate takes the end examination or not as per the normal course study. And in case of getting detained for want of credits by points 4&5, the student may make up the credits through supplementary exams of the above exams before the date of class work commencement of III B.Tech I Semester and IV I Semester respectively.
5. There shall be supplementary examinations along with the regular end examinations enabling the students to give a fair chance to clear the subject if failed.
6. However, advance supplementary examinations shall be conducted for all such students who had failed at the IV B.Tech II Semester subjects of their study.
7. A student shall register for all the subjects and earn all the 200 credits as indicated in the course structure within eight academic years (6 consecutive years for LES students) from the year of their admission shall forfeit their seat in B.Tech course and their admission shall stand cancelled.

12. AWARD OF CLASS:

After the student has satisfied the requirements, prescribed for the completion of the programme and is eligible for the award of B.Tech. Degree, he shall be placed in one of the following four classes:

Table 13: Award of Division

Class Awarded	% of marks to be secured
First Class with Distinction	70% and above
First Class	Below 70% but not less than 60%
Second Class	Below 60% but not less than 50%
Pass Class	Below 50% but not less than 40%

13. TRANSITORY REGULATIONS:

A student, who is detained or discontinued in the year/semester, on readmission shall be required to do all the courses in the curriculum prescribed for such batch of students in which the student joins subsequently.

13.1 A student who is following the JNTUA, Ananthapuramu curriculum, detained due to lack of credits/ attendance at the end of the first semester of second year, shall join the autonomous batch of I Semester of II B.Tech. Such students will study all the courses prescribed for that batch, in which the student joins. The first year marks shall not be converted in to course credits. However, the student has to clear all his first year backlog subjects if any by appearing in the supplementary examinations of JNTUA, Ananthapuramu when conducted and courses prescribed in Autonomous stream for the Award of Degree. The class will be awarded based on the academic performance of a student. Such candidates will be considered on par with lateral entry candidates of autonomous stream and will be governed by the regulations applicable to lateral entry candidate's category.

13.2. A student who is following the JNTUA, Ananthapuramu curriculum, detained due to lack of credits/ attendance at the end of the second semester of second B.Tech, and also at the subsequent semesters, shall join the autonomous batch at the appropriate semester. Such candidates shall be required to pass in all the courses in the Programme prescribed by concerned BOS for such batch of students, to be eligible for the award of degree. However, exemption will be given in all those courses of the semester(s) of the batch, which the candidate joins now, which he had passed earlier. The student has to clear all his backlog subjects by appearing in the supplementary examinations, conducted by JNTUA, Ananthapuramu and College (Autonomous Stream) for the Award of Degree. The class will be awarded based on the academic performance of a student in the JNTUA Pattern and academic regulations of JNTUA will be followed.

14. READMISSION CRITERIA:

A Candidate, who is detained in a year/semester due to lack of attendance/credits, has to obtain written permission from the Principal for readmission into the same semester after duly fulfilling all the required norms stipulated by the college in addition to paying the required fee.

15. SUPPLEMENTARY EXAMINATIONS:

Apart from the regular End Examinations the institute may also schedule and conduct supplementary examinations for all subjects for the benefit of students with backlogs. Such students writing supplementary examinations as supplementary candidates may have to write more than one examination per day.

16. CONDUCT AND DISCIPLINE:-

(a) Students shall conduct themselves within and outside the premises of the Institute in a descent and dignified manner befitting the students of Audisankara College of Engineering & Technology.

(b) As per the order of the Honorable Supreme Court of India, ragging in any form is considered a criminal offence and is totally banned. Any form of ragging will be severely dealt with.

(c) The following acts of omission and / or commission shall constitute gross violation of the code of conduct and are liable to invoke disciplinary measures with regard to ragging.

  (i) Lack of courtesy and decorum; indecent behavior anywhere within or outside the college campus.
  (ii) Damage of college property or distribution of alcoholic drinks or any kind of narcotics to fellow students / citizens.

(d) Possession, consumption or distribution of alcoholic drinks or any kind of narcotics or hallucinogenic drugs.

(e) Mutilation or unauthorized possession of library books.

(f) Noisy and unruly behavior, disturbing studies of fellow students.

(g) Hacking in computer systems (such as entering into other person's areas without prior permission, manipulation and / or damage of computer hardware and software or any other cyber crime etc.

(h) Usage of camera /cell phones in the campus.

(i) Plagiarism of any nature.

(j) Any other act of gross indiscipline as decided by the college academic council from time to time.

(k) Commensurate with the gravity of offense, the punishment may be reprimand, fine, expulsion from the institute/ hostel, debarring from examination, disallowing the use of certain facilities of the Institute, rustication for a specified period or even outright expulsion from the Institute, or even handing over the case to appropriate law enforcement authorities or the judiciary, as required by the circumstances.

(l) For an offence committed in (i) a hostel (ii) a department or in a class room and (iii) elsewhere, the chief Warden, the concern Head of the Department and the Principal respectively, shall have the authority to reprimand or impose fine.

(m) Cases of adoption of unfair means and/ or any malpractice in an examination shall be reported to the principal for taking appropriate corrective action.

(n) All cases of serious offence, possibly requiring punishment other than reprimand, shall be reported to the Academic council of the college.

(o) The Institute Level Standing Disciplinary Action Committee constituted by the academic council shall be the authority to investigate the details of the offence, and recommend disciplinary action based on the nature and extent of the offence committed.

(p) The Principal shall deal with any problem, which is not covered under these rules and regulations.

(q) **"Grievance and Redressal Committee" (General)** constituted by the Principal shall deal with all grievances pertaining to the academic / administrative / disciplinary matters.

(r) All the students must abide by the code and conduct rules prescribed by the college from time to time.

17.0 RULES FOR DISCIPLINARY ACTION FOR MALPRACTICE / IMPROPER CONDUCT IN EXAMINATIONS

	Nature of Malpractices/Improper conduct	**Punishment**
	If the candidate	
1. (a)	Possesses or keeps accessible in examination hall, any paper, note book, programmable calculators, Cell phones, pager, palm computers or any other form of material concerned with or related to the subject of the examination (theory or practical) in which he is appearing but has not made use of (material shall include any marks on the body of the candidate which can be used as an aid in the subject of the examination)	Expulsion from the examination hall and cancellation of the performance in that subject only.
(b)	Gives assistance or guidance or receives it from any other candidate orally or by any other body language methods or communicates through cell phones with any candidate or persons in or outside the exam hall in respect of any matter.	Expulsion from the examination hall and cancellation of the performance in that subject only of all the candidates involved. In case of an outsider, he will be handed over to the police and a case is registered against him.
2.	Is found copying 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/year. The Hall Ticket of the candidate will be cancelled.
3.	Comes in alcohol 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/year.
4.	Smuggles the Answer book or a part there of 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 end examinations. The continuation of the course by the candidate is subject to the academic regulations in connection with forfeiture of seat.
5.	Leaves the exam hall taking away answer script or intentionally tears of the script or	Expulsion from the examination hall and cancellation of performance in that subject and

	any part thereof inside or outside the examination hall.	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 end examinations. The continuation of the course by the candidate is subject to the academic regulations in connection with forfeiture of seat.
6.	Possesses 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 will also be debarred and forfeit the seat.
7.	Impersonates any other candidate in connection with the examination.	The candidate who has impersonated shall be expelled from examination hall. The candidate will also be debarred and forfeit 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 will also be debarred for two consecutive semesters from class work and all end examinations. The continuation of the course by the candidate is subject to the academic regulations in connection with forfeiture of seat. If the impostor is an outsider, he will be handed over to the police and a case registered against him.
8.	Refuses to obey the orders of the Chief Superintendent/Asst. 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 causing any injury to him or to any of his relations whether by words, either spoken or written or by signs or by visible representation, assaults the officer-in-charge, or any person on duty in or outside the examination hall or any of his relations, or indulges in any other act of misconduct or mischief which result in damage to or destruction of property in the	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 registered against them.

	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.	
9.	Is a 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 clauses 6 to 8.	In case of students of the college 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.	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.
11.	Is detected copying 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.	Indulging in any malpractice which is not covered in the above clauses 1 to 11 if detected shall be reported to the College Authorities for further action to award suitable punishment.	Appropriate action will be taken as recommended by the College Authorities.

Malpractices identified by squad or special invigilators

1. Punishments to the candidates as per the above guidelines.

18. AWARD OF RANK:

The rank shall be awarded based on the following:

- Only such candidates, who pass the Final Semester end examination at the end of the II Semester of IV B.Tech (Final Semester) after admission as regular final year students along with the others in their batch and become eligible for the award of the Degree, shall be eligible for the award of rank. Candidates, who lose one year / one or more Semesters of study for any reason what so ever are not eligible for the award of rank.
- Ranks shall be awarded in each branch of study for the top five students appeared for the Regular Examinations.
- For the purpose of awarding rank in each branch, the aggregate of marks (Internal + External) of all courses (put together) in all the four years, secured at the first attempt only shall be considered.
- Award of prizes, scholarships, or any other Honors shall be based on the rank secured by a candidate, consistent with the guidelines of the Donor, wherever applicable.

19. GENERAL:

(a) Where the words “he” “him” “his” occur in the regulations, they include “she”, “her”.

(b) The academic regulation should be read as a whole for the purpose of any interpretation.

(c) In the case of any dues or ambiguity in the interpretation of the above rules, the decision of the Principal is final.

(d) The Institute may change or amend the academic regulations or syllabi at any time duly approved by Academic Council and the changes or amendments made shall be applicable to all the students with effect from the dates notified by the Institute.

20. CHANGE OF BRANCH:

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

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)
Gudur, Nellore Dist - 524101, A.P (India)

(LATERAL ENTRY SCHEME)

(Effective for the students getting admitted into II year through Lateral Entry Scheme from the Academic Year 2014-2015 onwards)

1. Award of B.Tech. Degree

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

i. Pursue a course of study for not less than three academic years and in not more than six academic years.

ii. Register for 154 credits from II Year to IV Year of Regular B.Tech. Program

2. Students, who fail to fulfill the requirement for the award of the degree in six consecutive academic year from the year of admission, shall forfeit their seat.

3. Minimum Academic Requirements:

The following academic requirements have to be satisfied in addition to the attendance requirements.

i. A student shall be deemed to have satisfied the minimum academic requirements and earned the credits allotted to each theory, practical, design, 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. For the seminar he should secure 40% in the internal evaluation.

ii. A student shall be promoted from third year to fourth year only if he fulfils the academic requirements of 39 credits from the following examinations.

   a. Two regular and one supplementary examinations of II year I semester.
   b. One regular and one supplementary examinations of II year II semester.
   c. One regular examination of III year I semester.

   Irrespective of whether the candidate takes the end examination or not as per the normal course of study and in case of getting detained for want of credits the student may make up the credits through supplementary exams of the above exams before the date of class work commencement of Fourth year I semester.

4. Course Pattern

i. The entire course of study is three academic years on semester pattern.

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

iii. When a student is detained due to lack of credits / shortage of attendance he may be re-admitted when the semester is offered after fulfillment of academic regulations, whereas he continues to be in the academic regulations he was first admitted.

5. Award of Class:

After a student has satisfied the requirements prescribed for the completion of the program and are eligible for the award of B.Tech. Degree he shall be placed in one of the following four classes:

Class Awarded	% of marks to be secured
First Class with Distinction	70% and above
First Class	Below 70% but not less than 60%
Second Class	Below 60% but not less than 50%
Pass Class	Below 50% but not less than 40%

6. All other regulations as applicable for B.Tech. Four-year degree course (Regular) will hold good for B.Tech. (Lateral Entry Scheme) students.

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY
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Gudur, Nellore Dist - 524101, A.P (India)

Course Structure for B.Tech (Computer Science and Engineering) Regular Programme Applicable for students admitted from Academic Year 2013-14

B.Tech I Year – Computer Science and Engineering

Sl.No	Course Code	Subject	Scheme of instruction (Periods per week)				Scheme of Examination			No. of Credits
			Th	Tu	Drg	Lab	IM	EM	Total Marks	
1	13HS101	Communicative English	2	-	-	-	30	70	100	3
2	13HS102	Engineering Physics	2	-	-	-	30	70	100	3
3	13HS103	Engineering Chemistry	2	-	-	-	30	70	100	3
4	13HS104	Engineering Mathematics-I	3	1	-	-	30	70	100	5
5	13HS105	Engineering Mathematics-II	3	1	-	-	30	70	100	5
6	13HS106	Environmental Science	2	-	-	-	30	70	100	3
7	13HS107	Computer Programming	3	1	-	-	30	70	100	4
8	13HS109	Engineering Drawing	2	-	4	-	30	70	100	4
9	13HS110	Computer Programming Lab	-	-	-	3	30	70	100	4
10	13HS111	Engineering Workshop and IT Workshop	-	-	-	3	30	70	100	4
11	13HS112	Engineering Physics and Engineering Chemistry Lab	-	-	-	3	30	70	100	4
12	13HS113	English Language and Communication Skills Lab	-	-	-	3	30	70	100	4
Contact Periods / Week			**19**	**3**	**4**	**12**	**360**	**840**	**1200**	
Total Periods / Week			**38**				**Total Credits**			**46**

Note: Th: Theory, Tu: Tutorial, Drg: Drawing, Lab: Laboratory, IM: Internal Marks, EM: External Marks

- The students attend the Engineering Workshop and IT Workshop in alternate Weeks. The end exam shall be conducted separately and average of the two exams will be recorded by the Autonomous exam section.
- The students attend the Engineering Physics Lab and Engineering Chemistry Lab in alternate Weeks. The end exam shall be conducted separately and average of the two exams will be recorded by the Autonomous exam section.

B.Tech II Year I Semester – Computer Science and Engineering

Sl.No	Course Code	Subject	Scheme of instruction (Periods / week)			Scheme of Examination			No. of Credits
			Th	Tu	Lab	IM	EM	Total Marks	
1	13HS115	Probability and Statistics	3	-	-	30	70	100	3
2	13HS120	Professional Ethics and Human Values	2	-	-	30	70	100	2
3	13CS301	Basic Electrical & Electronics Engineering	3	-	-	30	70	100	3
4	13CS302	Electronic Devices and Circuits	3	1	-	30	70	100	3
5	13CS303	Digital Logic Design	3	-	-	30	70	100	3
6	13CS304	Object Oriented Programming through C++	3	1	-	30	70	100	3
7	13CS305	Data Structures	3	1	-	30	70	100	3
8	13CS306	Basic Electrical and Electronics Lab	-	-	3	30	70	100	2
9	13CS307	Data Structures Lab	-	-	3	30	70	100	2
10	13CS308	Object Oriented Programming through C++ Lab	-	-	3	30	70	100	2
Contact Periods / Week			**20**	**3**	**9**	**300**	**700**	**1000**	
Total Periods / Week			**32**			**Total Credits**			**26**

B.Tech II Year II Semester – Computer Science and Engineering

Sl.No	Course Code	Subject	Scheme of instruction (Periods / week)			Scheme of Examination			No. of Credits
			Th	Tu	Lab	IM	EM	Total Marks	
1	13HS118	Managerial Economics and Financial Analysis	3	-	-	30	70	100	3
2	13CS401	Computer Organization	3	-	-	30	70	100	3
3	13CS402	Database Management Systems	3	1	-	30	70	100	3
4	13CS403	JAVA Programming	3	1	-	30	70	100	3
5	13CS404	Mathematical Foundations of Computer Science	3	-	-	30	70	100	3
6	13CS405	Operating Systems	3	1	-	30	70	100	3
7	13CS406	Operating Systems Lab	-	-	3	30	70	100	2
8	13CS407	JAVA Lab	-	-	3	30	70	100	2
9	13CS408	Database Management Systems Lab	-	-	3	30	70	100	2
10	13CS409	Technical Seminar-I	-	1	-	100	-	100	2
Contact Periods / Week			**18**	**4**	**9**	**370**	**630**	**1000**	
Total Periods / Week			**31**			**Total Credits**			**26**

B.Tech III Year I Semester – Computer Science and Engineering

Sl.No	Course Code	Subject	Scheme of instruction (Periods / week)			Scheme of Examination			No. of Credits
			Th	Tu	Lab	IM	EM	Total Marks	
1	13HS121	Qualitative and Quantitative Analysis	2	-	-	30	70	100	2
2	13CS501	Micro Processors and Micro Controllers	3	-	-	30	70	100	3
3	13CS502	Principles of Programming Languages	3	1	-	30	70	100	3
4	13CS503	Computer Networks	3	1	-	30	70	100	3
5	13CS504	Design and Analysis of Algorithms	3	1	-	30	70	100	3
6	13CS505	Formal Languages and Automata Theory	3	-	-	30	70	100	3
7	13CS506	Software Engineering	3	-	-	30	70	100	3
8	13CS507	Microprocessors and Microcontrollers Lab	-	-	3	30	70	100	2
9	13CS508	Computer Networks Lab	-	-	3	30	70	100	2
10	13HS122	Soft Skills Lab	-	-	3	30	70	100	2
Contact Periods / Week			**20**	**3**	**9**	**300**	**700**	**1000**	
Total Periods / Week			**32**			**Total Credits**			**26**

B.Tech III Year II Semester – Computer Science and Engineering

Sl.No	Course Code	Subject	Scheme of instruction (Periods / week)			Scheme of Examination			No. of Credits
			Th	Tu	Lab	IM	EM	Total Marks	
1	13CS601	Computer Graphics	3	1	-	30	70	100	3
2	13CS602	Object Oriented Analysis and Design	3	-	-	30	70	100	3
3	13CS603	Network Security and Cryptography	3	-	-	30	70	100	3
4	13CS604	Unix Programming	3	1	-	30	70	100	3
5	13CS605	Web Technologies	3	1	-	30	70	100	3
6	13CS606	Compiler Design	3	-	-	30	70	100	3
7	13CS607	Case Tools Lab	-	-	3	30	70	100	2
8	13CS608	UNIX and Compiler Design Lab	-	-	3	30	70	100	2
9	13CS609	Web Technologies Lab	-	-	3	30	70	100	2
10	13CS610	Technical Seminar-II	-	1	-	100	-	100	2
Contact Periods / Week			**18**	**4**	**9**	**370**	**630**	**1000**	
Total Periods / Week			**31**			**Total Credits**			**26**

B.Tech IV Year I Semester – Computer Science and Engineering

Sl.No	Course Code	Subject	Scheme of instruction (Periods / week)			Scheme of Examination			No. of Credits
			Th	Tu	Lab	IM	EM	Total Marks	
1	13HS119	Management Science	3	-	-	30	70	100	3
2	13CS701	Cloud Computing	3	1	-	30	70	100	3
3	13CS702	Data Warehousing and Data Mining	3	1	-	30	70	100	3
4	13CS703	Software Testing	3	1	-	30	70	100	3
5	13CS704 13CS705 13CS706	**Elective-I** 1.Advanced Computer Architecture 2.Digital Image Processing 3.Distributed Systems	3	-	-	30	70	100	3
6	13CS707 13CS708 13CS709	**Open Elective** 1.Big Data 2.E-Commerce 3.Green Computing	3	-	-	30	70	100	3
7	13CS710	Cloud Computing Lab	-	-	3	30	70	100	2
8	13CS711	Data Warehousing and Data Mining Lab	-	-	3	30	70	100	2
9	13CS712	Testing Tools Lab	-	-	3	30	70	100	2
10	13CS713	Project Work Phase-I	-	-	2	100	-	100	2
Contact Periods / Week			**18**	**3**	**11**	**370**	**630**	**1000**	
Total Periods / Week			**32**			**Total Credits**			**26**

B.Tech IV Year II Semester – Computer Science and Engineering

Sl.No	Course Code	Subject	Scheme of instruction (Periods / week)			Scheme of Examination			No. of Credits
			Th	Tu	Lab	IM	EM	Total Marks	
1	13CS801	Software Architecture and Design Patterns	3	1	-	30	70	100	3
2	13CS802	Human Computer Interface	3	1	-	30	70	100	3
3	13CS803 13CS804 13CS805	**Elective-II** 1.Software Project Management 2. Adhoc and Wireless Sensor Networks 3. Mobile Computing	3	-	-	30	70	100	3
4	13CS806 13CS807 13CS808	**Elective-III** 1.Intelligent Agents 2.Secure Software Engineering 3.Web Services	3	-	-	30	70	100	3
5	13CS809	Comprehensive Viva-Voce	-	-	-	-	100	100	2
6	13CS810	Project Work Phase-II	-	-	-	50	150	200	10
Contact Periods / Week			**12**	**2**	**-**	**170**	**530**	**700**	
Total Periods / Week			**14**			**Total Credits**			**24**

AUDISANKARA COLLEGE OF ENGINEERING & TECHNOLOGY: GUDUR
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Detailed Syllabus

I B.Tech (CSE)	L	T	P	[C]
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(13HS101) COMMUNICATIVE ENGLISH

Objectives:
- To improve the language proficiency of the students in English with an emphasis on LSRW skills.
- To equip the students to study academic subjects with greater facility through theoretical and practical components of the syllabus.
- To develop study skills as well as communication skills in formal and informal situations.

1. SYLLABUS :

Listening Skills:

Objectives

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

Students should be given practice in listening and identifying the sounds of English language and to mark stress , right intonation in connected speech.

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

2. TEXTBOOKS PRESCRIBED:

In order to improve the proficiency of the student in the acquisition of the four skills mentioned above, the following texts and course content are prescribed and divided into Four Units:

For Detailed study: **ENJOYING EVERYDAY ENGLISH**, Sangam Books (India) Pvt Ltd Hyderabad, 2009

For Non-detailed study: **INSPIRING LIVES**, Maruti Publications, Guntur, 2009

UNIT –I:

Heaven's Gate: Introduction of the Author and Lesson, Paragraphs and Description, Introduction of Leh,… Greeting and Leave Taking and Introducing, Naming Words, Homonyms, Homophones, Homographs, Synonyms and Antonyms.

Mokshagundam Visvesvaraya: Introduction of Visvesvaraya, Childhood, Education, Projects he Undertook, Social Reforming Activities….. Synonyms and Antonyms.

UNIT –II:

Cuddalore Experience: Introduction of the Author and Lesson, Paragraphs and Description, Description of Tsunami, Damage Caused, Immediate Rescue Operations Implemented….. Official Reports, Congratulating, Offering Sympathy and Condolences and Making Complaints, Tenses, Phrasal Verbs.

Mother Teresa: Introduction of Teresa, Childhood, Humanity Work, Honours and Awards…. One Word Substitutes.

UNIT –III:

Odds against us: Introduction of the Author and Lesson, Paragraphs and Description, Differences between Foreign Movies and Indian Movies, Three Factors that Guide a Director….. Information Transfer, Conjunctions and Prepositions, Technical Vocabulary.

Charlie Chaplin: Introduction of Chaplin, His Films, His married Life….. One Word Substitutes

UNIT –IV:

Exercises on:

Remedial Grammar covering Common errors in English, Use of Articles and Prepositions, Active/Passive Voice, Reported speech, Tenses, Degrees of Comparison, conditional Clauses (If/Weather/Unless), One Word Substitutions, Idiomatic Expressions, Synonyms & Antonyms, Words often confused, Question Tags.

Exercises on:

Letter Writing

Report Writing

Reference Books:

1. Meenakshi Raman and Sangita Sharma, Technical Communication , Principle and Practice, OUP, 2009
2. Essential Grammar in Use, (with CD) 3/e, Cambridge University Press, 2009
3. M.Ashraf Rizvi, Resumes and Interviews, Tata – McGraw Hill, 2009
4. Robert J. Dixson , Everyday Dialogues in English, Prentice-Hall of India Ltd., 2006.
5. Farhathullah, Communication Skills for Technical Students, T.M., Orient Blackswan, 2008

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I B.Tech (CSE)	L	T	P	[C]
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(13HS102) ENGINEERING PHYSICS

Objectives: To Impart the awareness among the Engineering Students about the present day technologies in Physics to reach the heights of technical globe with latest technologies in Fiber Optics, Nanotechnology, Super Conductivity and Lasers.

UNIT – I:

Optics, Fiber Optics and Lasers

Interference: Introduction, Interference in thin film by reflection, Newton's rings.

Diffraction: Introduction, Fraunhoffer diffraction due to single slit, Diffraction Grating.

Fiber Optics: Construction of Optical Fiber, Principle of Optical Fiber, Acceptance angle and Acceptance cone, Numerical aperture, Types of Optical Fibers, Fiber optic communication system and its advantages, Attenuation in Optical Fibers, Applications of Optical Fibers.

Lasers: Introduction, Characteristics of Lasers, Spontaneous & Stimulated emission of radiation, Population Inversion, Pumping Methods, Components of Lasers, Ruby Laser, Helium Neon Laser, Semiconductor laser, Applications of Lasers.

UNIT – II:

Crystal Structures, X-Ray Diffraction and Semiconductors

Crystal Structures, X-Ray Diffraction: Introduction, Space Lattice, Basis, Unit Cell, Lattice Parameters, Bravais Lattices, Crystal systems, Expression for Lattice constant, Structure and Packing factor of SC, BCC & FCC crystals, Structure of NaCl and Diamond, Crystal Planes, Crystal directions and Miller Indices , Important features of Miller Indices, Expression for Interplanar spacing in rectangular coordinate systems, X-ray Diffraction by crystal planes, Bragg's law, Laue Method, Powder Method .

Semiconductors: Introduction, Intrinsic semiconductor and carrier concentration, Extrinsic semiconductor and carrier concentration, Law of mass action, Electrical conductivity in semiconductors, Drift and Diffusion, Einstein relation, Hall Effect, Direct and Indirect Band gap semiconductors, LED, Photodiodes.

UNIT–III:

Principles of Quantum Mechanics, Band Theory of Solids and Magnetic Properties:

Principles of Quantum Mechanics : Waves and particles, de-Broglie Hypothesis, Matter waves, Heisenberg Uncertainty principle, Applications of Heisenberg uncertainty principle, Schrodinger time independent wave equation, Physical significance of wave function, Particle in one dimensional potential box, Fermi Dirac Distribution function, Electron Scattering and Sources of electrical resistance.

Band Theory of Solids: Electron in a periodic potential, Kronig-Penny Model (qualitative treatment only), Origin of Energy Bands formation in Solids, Effective mass of electron, Classification of solids into Conductors, Semiconductors & Insulators based on Band theory.

Magnetic Properties: Magnetic susceptibility, Origin of Magnetic moment-Bohr magneton, Classification of magnetic materials, Domain theory of ferromagnetism, Hysteresis curve, Ferrites and its applications, Soft and hard magnetic materials.

UNIT – IV

Superconductivity & Nanotechnology

Superconductivity: Introduction, Properties of superconductors, Meissner Effect, Type – I and Type – II Superconductors, Flux Quantization, Penetration Depth. Josephson Effect, BCS theory, Applications of superconductors, High Temperature Superconductors.

Nanotechnology: Origin of Nanotechnology, Nanoscale, Surface area to volume ratio, Quantum Confinement effect, Properties of nanomaterials, Electrical properties, Optical properties, Magnetic Properties, Mechanical properties, Fabrication of nanomaterials by Ball Milling, Plasma Arcing, Chemical vapour deposition, Sol-Gel method, Electrode position methods and Applications of Nanomaterials.

CNT-Introduction, Types, Properties, Production, Applications of CNTS, Graphene and Graphene based FET.

Text Books:

1. V. Rajendran, K.Thyagarajan Engineering Physics , III Edition, 2012.Tata MacGraw Hill Publishers
2. P.K.Palanisamy , Engineering Physics, II Edition 2010 Scitech Publishers.

Reference Books:

1. S. ManiNaidu ,Engineering Physics, I Edition, 2012. Pearson Education
2. M. Arumugam , Engineering Physics II Edition, 1997 , Anuradha Publications.
3. A.J. Dekkar , Solid State Physics , Latest edition, 2012. McMillan Publishers
4. Gaur and Gupta Dhanapati , Engineering Physics, 7th Edition, 1992 Rai Publishers ,.
5. B S Murthy, P.Shankar, Baldev Raj B BRath, James Murday , I Edition, 2012. Text book of Nanoscience and Nanotechnology:, University Press,
6. H.S. Philip Wong, Deji Akinwande , Carbon Nanotubes and Graphene Device Physics –, Cambridge University Press, 2011.

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I B.Tech (CSE)	L	T	P	[C]
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(13HS103) ENGINEERING CHEMISTRY

Objectives:

- The Chemistry course for undergraduate students is framed to strengthen the fundamentals of chemistry and then build an interface of theoretical concepts with their industrial/engineering applications.
- The extension of fundamentals of electrochemistry to energy storage devices such as commercial batteries and fuel cells is one such example.

UNIT – I:

Water Technology & Fuel Technology:

Water Technology: Sources of water, Hardness of water, units of hardness, Estimation of hardness by EDTA method, Analysis of water – Dissolved oxygen, Estimation of Chloride, Alkanity, Acidity.

Sterilization of water: Chlorination, Ozonisation, Addition of Bleaching powder.

Water for Industrial Purpose: Water for steam generation, Boiler troubles – priming and foaming, Boiler corrosion, sludges and scales, caustic embrittlement.

Water treatment: Internal treatment – colloidal, phosphate, calgon, carbonate and sodium aluminate conditioning. Softening methods of water – Ion exchange process. Determination of brakish water – Reverse Osmosis.

Fuel Technology: Definition, classification, characteristics of good fuel.

Solid fuels: Coal, classification, Metallurgical coke – characteristics and Manufacturing (Otto-Halfman's by product oven method)

Liquid fuels: Petroleum, origin, refining, and fractional distillation, synthetic petrol.

Gaseous fuels: Composition and preparation of producer gas, water gas, bio gas, coal gas, natural gas.

Calorific Value and its Units, flue gas analysis by Orsat's apparatus.

Lubricants: Functions, Classification and Properties – viscosity, viscosity index, flash and fire point, pour and cloud point, aniline point, mechanical strength, neutralization number.

UNIT – II:

Electrochemistry and Science of corrosion:

Electrochemistry : Conductance, Equivalent conductance, Molecular conductance, conduct metric titrations, Applications of conductivity measurement., numerical calculations, review of electro chemical cells-Galvanic cells.

Batteries: Ni-Cd cell, Lithium ion cells, fuel cells – Hydrogen Oxygen Fuel cell, Methanol fuel cell.

Science of corrosion: Definition and Types of corrosion – Dry corrosion and wet corrosion. Galvanic series, Galvanic corrosion and concentration cell corrosion.

Factors influencing corrosion,

Control of corrosion: Use of inhibitors, Sacrificial Anode, Impressed current, Electroplating and Electro less plating (Cu and Ni).

UNIT – III:

Polymers and advanced Engineering Materials

Polymers: Basic concepts, Types of polymerization – Addition, condensation, co-polymerization.

Plastics: Thermoplastics and Thermosetting plastics, preparation, properties and Engineering uses of Teflon, PVC, Bakelite, Nylon.
Natural Rubber (Elastomers): Processing, Compounding, Vulcanization of Natural Rubber.
Synthetic Rubber: Buna – S, Buna – N, Poly urethane, poly sulphide and silicone Rubber.
Advanced Engineering Materials:
Conducting Polymers: Synthesis and Applications of poly acetylene, poly aniline.
Liquid Crystals: Definition, properties, and classification and Engineering applications.
Inorganic Polymers: Basic Introduction, Silicones, Polyphospazins (-(R) 2 – P = N -) and applications.

UNIT – IV:
Building Materials and Photo Chemistry
Cement: Definition, Composition and Manufacture of Portland cement, Analysis, setting and hardening of cement.
Refractories: Definition, classification, criteria of good Refractory- Refractoriness, Refractoriness under load, Chemical inertness, Dimensional stability, Thermal spalling, porosity, Thermal expansion, Thermal conductivity, Abrasion Resistance, Electrical conductivity. Causes for failure of refractories.
Photo Chemistry:
Photochemical Reactions, Difference between Photochemical reactions and thermochemical reactions. Absorption of light: Beer-Lambert's law.
Photo-physical Processes: (a) Fluorescence. (b) Phosphorescence and (c) Chemi-luminiscence applications.

Text Books:

1. Prof. K.N.Jayaveera, Dr.G.V.Subba Reddy and Dr.C. Ramachandraiah, , Engineering Chemistry Fourth Edition, 2012 McGraw Hill Higher Education, New Delhi.
2. Jain & Jain, Text book of Engineering Chemistry , 15th Edition 2009, Dhanpat Rai Publishing Company, New Delhi.

Reference Books:

1. S.S Dhara, S.S.Umare, A Text book of Engineering Chemistry ,12th Edition, 2010. S. Chand Publications, New Delhi,
2. K.B.Chandra Sekhar, UN.Das and Sujatha Mishra Engineering Chemistry , 2nd Edition, 2012 SCITECH, Publications India Pvt Limited, Chennai
3. K. Sesha Maheswaramma and Mrudula Chugh , Engineering Chemistry, First Edition, 2013 PearsonEducation
4. C.V. Agarwal, Chemistry of Engineering Materials Varanasi,2008. Tara Publication.

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I B.Tech (CSE)	L	T	P	[C]
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(13HS104) ENGINEERING MATHEMATICS-I

Objectives: The Subject is aimed at developing the basic mathematical skills of engineering students that are imperative for effective understanding of engineering subjects. The topics introduced will serve as basic tools for specialized studies in many engineering fields.

UNIT – I:

Differential & Integral Calculus

Mean Value Theorems – Rolle's, Lagrange's, Cauchy's, Taylor's, and Maclaurin's theorem (without proofs) with simple related problems.

Functions of several variables - Jacobian, functional dependence, Taylor's and Maclaurin's series(without proof) with two variables , maxima & minima of function of two and three variables.- Lagrange's method of multipliers with three variables only

Radius of Curvature – Cartesian, Polar, Parametric forms and Radius of Curvature at Origin (Newton's Method).

Curve Tracing – Cartesian, Polar, Parametric forms.

Multiple Integrals - Evaluation of Double Integrals – Change of Order of Integration- Change of Variables- Evaluation of Triple Integrals.

UNIT-II:

Ordinary Differential Equations:

Differential Equations of First Order and First Degree: Exact Differential Equations, Integrating factors, Linear Differential Equations, Bernoulli's Differential Equations, Orthogonal Trajectories of curves, Newton's Law of cooling, Law of Natural Decay & Growth.

Linear Differential Equations of Second or Higher Order: Homogeneous, Non -Homogeneous, Differential Equations of second and higher order with constant coefficients with RHS terms of the type e^{ax}, Sin ax/cos ax, Polynomial in x, $e^{ax}V$ [V is sin ax or cos ax or polynomial in x], $x^m V$ [V is sin ax/ cos ax], method of Variation of parameters.

UNIT III:

Laplace Transforms

Laplace transforms of standard functions – Inverse Laplace - First shifting Theorem, Transforms of derivatives and integrals – Unit step function – Second shifting theorem – Dirac's delta function – Convolution theorem – Laplace transform of Periodic function.

Differentiation and integration of Laplace transforms – Application of Laplace transforms to ordinary differential equations of first and second order.

UNIT IV:

Vector Calculus:

Vector Differentiation: Scalar and Vector point functions, Gradient of scalar point function, Directional derivatives – Divergence of a vector point function – Curl of a vector point function and their related properties.

Vector integration: Line integral - Work done – Vector potential function – Area, Surface and volume integrals. Green's theorem, Stoke's Theorem, and Gauss's Divergence Theorem (without proof), Applications of Green's , Stoke's and Gauss's Theorems.

Text Books:

1. T.K.V. Iyengar , Engineering Mathematics Volume-I , 12th Edition(2013) , S.Chand publication
2. E. Rukmangadachari & E. Keshava Reddy, Engineering Mathematics, Volume – I , 1st Edition (2010). Pearson Publisher

Reference Books:

1. Erwin Kreyszig , Advanced Engineering Mathematics, 10thEdition(2012), Wiley India.
2. B.S.Grewal ,Higher Engineering Mathematics, 42 Edition(2012), Khanna publishers .
3. Debashish Dutta ,Text Book of Engineering Mathematics, New Age International Publishers.
4. B.V.Ramana ,Higher Engineering Mathematics, Mc Graw Hill publishers(2008)

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(13HS105) ENGINEERING MATHEMATICS-II

Objectives: The course is aimed at developing the basic mathematical skills of engineering students that are imperative for effective understanding of engineering subjects. The topics introduced will serve as basic tools for specialized studies in many engineering fields.

UNIT – I:

Matrix Algebra: Rank of a matrix – Normal form, Echelon form – Inverse of a matrix using elementary operations –Consistency of system of Linear equations (Homogenous and Non-homogeneous) Hermitian & Skew Hermitian- unitary matrices and their properties. Eigen Values and Eigen Vectors (Real and Complex Matrices) Cayley- Hamilton theorem and its applications. Diagonalization of a matrix – Reduction of a quadratic form to canonical form by orthogonal transformation.

UNIT-II:

Numerical Analysis: Numerical solutions of algebraic and transcendental equations by Regula – Falsi method, Newton – Raphson method, Bisection, and Iteration methods. Forward, backward differences, Newton's forward and backward interpolation formulae, Lagrange interpolation, Numerical differentiation formula for derivative using Newton's forward and backward differences. Numerical Integration with Trapezoidal rule, Simpson's 1/3 rule and Simpson's 3/8 rule. Taylor series method, Euler's method, Modified Euler's method, Runge-Kutta method of 2^{nd} & 4^{th} orders, for solving first order ordinary differential equations.

UNIT- III:

Fourier Series: Expansion of a function in Fourier series for a given range – Half range sine and cosine expansions. Complex form of Fourier series – Fourier transformation – sine and cosine transformations – simple illustrations.

Z-Transforms: Inverse Z-transforms-Damping Rule and shifting Rule, initial and final value theorems – Convolution theorem- Difference equations – Solution of difference equations using z – transforms

UNIT- IV :

Partial Differential Equations: Formation of Partial Differential Equations by elimination of arbitrary constants and arbitrary functions - Method of Separation of variables - Solutions of one dimensional wave equation, Heat Equation, and two dimensional Laplace's equation under initial and boundary conditions.

Text Books:

1. T.K.V. Iyengar ,Mathematical Methods , 8th Edition(2013) ,S. Chand publication.
2. E. Rukmangadachari & E. Keshava Reddy, Engineering Mathematics, Volume - II, Pearson Publisher-1st Edition (2010)

Reference Books:

1. B.S.Grewal ,Higher Engineering Mathematics, 42 Edition(2012),Khanna publishers. 2.
2. B.V.Ramana , Higher Engineering Mathematics, Mc Graw Hill publishers(2008).
3. Debashish Dutta,Text Book of Engineering Mathematics,New Age international Publishers.
4. Erwin Kreyszig,Advanced Engineering Mathematics, 10th Edition(2013),Wiley India.

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(13HS106) ENVIRONMENTAL SCIENCE

Objectives: The student should be conversant with the evolution and the importance of environmental studies, various natural resources and the current threats to their sustainability, significance and protection of bio diversity and various forms of environmental degradation causes, effects and control measures of various pollutants and international conventions and protocols for the protection of environment.

UNIT-I:

Introduction to Environmental Science and Natural Resources:

Environment: Definition, scope, importance – need for public awareness. Renewable and non-Renewable resources. Natural resources and associated problems. Forest resources: Use –over exploitation- deforestation - case studies. Mining, dams - effects on forests and tribal people. Water resources: Use – over utilization of surface and ground water. Floods, drought, conflicts over water. Mineral resources: Use – exploitation - environmental effects of extracting and using mineral resources - case studies. Food resources: World food problems - changes caused by agriculture and overgrazing - effects of modern agriculture- fertilizer-pesticide problems. Water logging, salinity. Energy resources: Growing energy needs - renewable and non renewable energy sources. Use of alternate Energy sources, Impact of Energy use on Environment.

UNIT-II:

Ecosystems and Biodiversity:

Concept of an ecosystem: Structure and function of an ecosystem – producers, consumers, decomposers. Energy flow in the ecosystem. Ecological succession – food chains - food webs and ecological pyramids. Types of ecosystem: Introduction - characteristic features - forest ecosystem - grassland ecosystem - desert ecosystem - aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries). Biodiversity: Introduction– definition, genetic - species –ecosystem diversity. Value of biodiversity: Consumptive use - productive use – social values – ethical values - aesthetic values. Biodiversity level: Global - national - local levels- India as a mega diversity nation- Hotspots of biodiversity. Threats to biodiversity: Habitat loss - poaching of wildlife – man wildlife conflicts – endangered and endemic species of India. Conservation of biodiversity: *In-situ* and e*x-situ* conservation of biodiversity**.**

UNIT-III

Environmental Pollution :

Pollution: Definition Cause, effects and control measures of –air pollution - water pollution - soil pollution - marine pollution - noise pollution - thermal pollution - nuclear hazards. Solid waste management: Causes - effects - control measures of Rural/Urban/Industrial waste management [with case study of any one type, e.g., power, fertilizer, tannin, leather, chemical, sugar]. Role of an individual in prevention of pollution. Population growth and Environment, Environment and human health. Effects of human activities (Urbanization, Transportation, Industrialization, Green revolution) on the Quality of Environment.

UNIT-IV

Social issues and the Environment:

From Unsustainable to Sustainable development – Urban problems related to energy – Water conservation, rain water harvesting and watershed management – Resettlement and rehabilitation of people; its problems and concerns. Case studies – Environmental ethics: Issues and possible solutions – Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case Studies – Wasteland reclamation. – Consumerism and waste products. Environment Protection Act. – Air (Prevention and Control of Pollution) Act.- Water (Prevention and control of Pollution) Act – Wildlife Protection Act – Forest Conservation Act – Issues involved in enforcement of environmental legislation – Public awareness.

Field Work:

Visit to a local area to document environment assets River/ forest grassland/ hill/mountain – Visit to a local polluted site-Urban/Rural / Industrial/ Agricultural Study of common plants, insects, birds – river, hill slopes, etc

Text Books:

1. Text book of Environmental Studies for Undergraduate Courses by Erach. Bharucha for University Grants Commission, Universities Press.
2. Environmental Studies by R. Rajagopalan, Oxford University Press.
3. Environmental Studies by Benny Joseph, Mc. Graw Hill Publications.

Reference Books:

1. Text book of Environmental Sciences and Technology by M.Anji Reddy, BS Publication.
2. Comprehensive Environmental studies by J.P. Sharma, Laxmi publications.
3. Environmental sciences and engineering – J. Glynn Henry and Gary W. Heinke – Printice hall of India Private limited.
4. Introduction to Environmental engineering and science by Gilbert M. Masters and Wendell P. Ela – Printce hall of India Private limited.
5. Environmental Studies by Anindita Basak – Pearson education.

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(13HS107) COMPUTER PROGRAMMING

Objectives: The primary objective is to develop the under – graduate students of Engineering a level of competence in IT required for independent and effective skills for academics and industry needs.

UNIT – I:

Introduction to Computers and Programming:

Introduction computers- What is a computer?, block diagram of computer, Computer characteristics, hardware, software, types of programming languages.

Introduction to computer problem solving: introduction, the problem solving aspects , top-down design, implementation of algorithms, program verification, Flow charts.

Introduction to C Language - C Language Elements, General form of a C Program, Variable declarations, Data types, Executable statements, Expressions, Precedence and Associativity, Expression Evaluation, Operators and Expressions, Type Conversions, Data Input and Output, Preparing and running a complete C program.

UNIT – II:

Control Statements:

Decision Statements: If, if-else, nested if and switch Statements, Loop Control Statements - while, for, do-while Statements, Nested Loops, Other Related Statements - break, continue, goto.

Functions: Function prototype, definition and accessing, passing arguments to a function, Library Functions, Scope of a function, Storage Classes - Auto, Register, Static, Extern, Scope rules, Type qualifiers, Recursion - Recursive functions, C Preprocessor, header files.

UNIT – III:

Arrays and Pointers:

Arrays: Declaring and Referencing arrays, Array subscripts, Using for Loops for Sequential access, Using array elements as function arguments, operations on Multidimensional Arrays.

Sorting and Searching: Bubble Sort, Selection Sort, Quick sort, Merge Sort, Linear and Binary Search Methods

Pointers: Introduction, Features of Pointers, Pointer Declaration, Arithmetic Operations with Pointers, Pointers and Arrays, Pointers and Two-Dimensional Arrays, Array of Pointers, Pointers to Pointers, Void Pointers, Memory Allocation Functions, Pointer to Functions, Command- Line Arguments.

Strings: String Basics, String Handling Functions, String Comparison, Searching and sorting of strings.

UNIT – IV:

Structure and Union

Structure and Union: Introduction, Features of structure, Declaration and Initialization of Structure, Structure within Structure, Array of Structures, Pointer to Structure, self referential Structures, Structures and Functions, type def and Enumerated data types, Unions, Bit fields

Files: Introduction, Streams and file types, Steps for file operations, File I/O structures, Read and Write, register variables and bitwise operations, File Status functions (error handling).

Text Books:

1. Byron S Gottfried, Jitender Kumar Chabra, Programming with C, , Third Edition, McGraHill Pvt. Ltd.
2. Jeri R Hanly, Elliot B. Koffman, Ashok Kamthane, A. Ananda Rao, Programming in C and data structures, Pearson Education

Reference Books:

1. R. G. Dromey, How to Solve it by Computer, Person Education,2008.
2. B.A.Forouzan and R.F. Gilberg, C Programming & Data Structures, Third Edition, Cengage Learning,2000.
3. Stephen G. Kochan,Programming in C –III Edition, Pearson Educataion,2004.
4. J.A. Jones & K. Harrow ,C Programming with problem solving, Dreamtech Press
5. Harry H. Cheng,C for engineers and scientists an interpretive approach, , McGraHill International Pvt. Ltd
6. E.Balagurusamy, C Programming & Data Structures, TMH,2009.

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(13HS109) ENGINEERING DRAWING

Objectives: Increase ability to communicate with people, Learn to take data and transform it into graphic drawings and Learn basic engineering drawing formats

UNIT – I:

Introduction to Engineering Drawing: Introduction to Drawing Instruments and their uses, Lettering, Types of Dimensioning, Division of a Line, Construction of Polygons, Inscribing of polygons, Describing of polygons.

Conic Sections

Ellipse: Eccentricity method, Oblong method, Parallelogram method, Arc's of Circles method and Concentric Circles method.

Parabola: Eccentricity method, Rectangle method, Tangent method, Parallelogram method.

Hyperbola: Eccentricity method, Rectangular hyperbola, Asymptotes method, Two branches of Hyperbola (Arc's of Circles method),Abscissa- Ordinate- method.

Cycloids: General Cycloid, Epi-Cycloid, Hypo-Cycloid.

UNIT – II:

Projections of Points, Straight Lines, Planes:

Points: Introduction to Orthographic Projections, Describing of quadrants , First and Third angle projection – Position of points in 4 quadrants.

Straight Lines: Lines parallel to both the principal planes, perpendicular to one plane and parallel to another plane, lines inclined to one plane, lines inclined to both the planes, finding true lengths, true inclinations.

Planes: Projection of regular plane surfaces, planes parallel to one plane, planes inclined to one plane and inclined to both the planes.

UNIT– III:

Projection of Solids, Sections and Development of Solids:

Solids: Positions of regular solids(prism, cylinder, pyramid and cone) – Projection of Solids – Axis perpendicular to one plane and parallel to another plane, inclined to one plane and inclined to both the planes, Axis parallel to both the Principal planes.

Section of Solids: Section Planes and Sectional views of Right Regular Solids–Prism, Cylinder, Pyramid and Cone. True shapes of the sections.

Development of Solids: Development of Surfaces of Right Regular Solids – Prisms, Cylinder, Pyramid, Cone and their Sectional parts.

UNIT – IV:

ISOMETRIC AND ORTHOGRAPHIC PROJECTIONS

Isometric Projections: Principles of Isometric Projection – Isometric Scale – Isometric Views– Conventions – Isometric Views of Lines, Plane Figures, Simple and Compound Solids – Isometric Projection of objects having non- isometric lines.

Orthographic Projections – Conversion of pictorial views into orthographic views

Text Books:

1. N.D. Bhat, Engineering Drawing, Charotar Publishers, 52nd Revised and Enlarged : 2013
2. K.L. Narayana, P. Khanniah, Engineering Drawing, Publisher, Scitech

Reference Books:

1. Venugopal, K., A Textbook of Engineering Graphics , New age Publishers,2009
2. Venkata Reddy, Engineering Drawing, B.S.Publishers ,2009
3. Basant Agrawal, C M Agrawal ,Engineering Drawing ,2013
3. V.Ramesh Babu, Engineering Drawing .2009
4. Shah and Rana, 2/e, Engineering Drawing, Pearson education.2013

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(13HS110) COMPUTER PROGRAMMING LAB

Objectives:

- To make the student learn a programming language.
- To teach the student to write programs in C to solve the problems.
- To introduce the student to simple linear data structures such as lists, stacks, queues.

Recommended Systems/Software Requirements:
Intel based desktop PC with ANSI C Compiler and Supporting Editors

EXERCISE-1:
a) Write a C program to evaluate area of triangle (sqrt(s(s-a)(s-b)(s-c).
b) Write a C program to swap 2 numbers without using temporary variable.
c) Write a C program to print Sum of n natural numbers.
d) Programs on Expressions

EXERCISE-2:
a) Write a C program to calculate the following Sum:
Sum=1-x2/2! +x4/4!-x6/6!+x8/8!-x10/10!
b) Write a C program to find the roots of a quadratic equation.
c) Write a C program to print prime Numbers up to n numbers

EXERCISE-3:
a) Write a C program to find factorial of a number using while, do-while, for loops
b) Write a C program to determine if the given Number is a palindrome or not
c) Write a C program to determine if the given Number is a Armstrong or not

EXERCISE-4:
a) Write a program on matrices
i) Addition ii) Subtraction iii) Multiplication iv) Transpose
v) Sum of diagonal elements vi) Summing row wise and column wise

EXERCISE-5:
Programs on sorting and searching

EXERCISE-6:
a) Write a program to implement call by value and call by reference
b) Write a C program to print Fibonacci series using recursion and iteratively
c) Write a C program to find factorial of a number using recursion and iteratively

EXERCISE-7:
a) Write a C program to sort 5 city names in alphabetical order
b) Write a C program to determine if the given string is a palindrome or not.
c) Write a C program to implement string handling functions

EXERCISE-8:
a) Write a C program to print address of variable
b) Write a C program print the element of array using pointers

EXERCISE-9:
a) write a c program to find the total salary of employee and salary of employee details
b) write a C program to pass structure as an arguments to function and calculate total marks of 5 subjects

EXERCISE-10:
a) Write a C program to write and read data to and from files
b) Write a C program which copies one file to another.
c) Write a C program to reverse the first n characters in a file.

EXERCISE-11:
Programs on command line arguments

EXERCISE-12:
Programs on self referencing

Reference Books:
1. M.Cooper, The Spirit of C, an introduction to modern programming, Jaico Publishing House.
2. K.R. Venugopal and S.R. Prasad, Mastering C, TMH Publications,2006.
3. V. Rajaraman, Computer Basics and C Programming, PHI Publications.

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(13HS111) ENGINEERING WORKSHOP AND I.T. WORKSHOP

ENGINEERING WORKSHOP

Objectives: The Engineering Workshop for engineers is a training lab course. It imparts the required knowledge about producing the Products particular joining methods, manufacturing methods among the students through which they will get an idea about shop floor level, a manufacturing section in industry.

1: Trades for Exercises:

(a) Carpentry Shop

1. Cross Lap Joint
2. Mortise and Tenon Joint

(b) Fitting Shop

1. Square Fitting
2. V Fitting

(c) Sheet Metal Shop

1.3-Sided Tray (Trapezoidal Tray)
2. Cylinder (Circular Tin)

(d) House Wiring

1. Wiring for two lamps (bulbs) with independent switch controls with or without looping
2. Wiring for stair case lamp.

(e) Foundry

1. Single Piece Pattern
2. Double Piece Pattern.

(f) Welding

1. Lap Joint
2. T - Joint

2: Trades for Demonstration

i. Machine Shop (Lathe Machine, Grinding Machine and Drilling Machine)
ii. Metal Cutting
iii. Plumbing

In addition to the above, hand tools, hand machines, models of jobs, materials with names such as different woods, wood faults, plastics, steels, meters, gauges, equipment, first-aid and shop safety shall be demonstrated through charts, layouts, figures, circuits, CD or DVD.

Reference Books:

1. Engineering Work shop practice, V. Ramesh Babu, VRB Publishers Private Limited, 2009
2. Work shop Manual, P.Kannaiah and K.L.Narayana, SciTech Publishers, 2009
3. Workshop Practice Manual, K. Venkata Reddy, BS Publications,

I.T. WORKSHOP

Objectives: The IT Workshop for engineers is a training lab course. The modules include training on PC Hardware, Internet & World Wide Web and Productivity tools including Word, Excel, Power Point and Publisher.

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 MS Windows, Linux and the required device drivers. In addition hardware and software level troubleshooting process, tips and tricks would be covered. The students should work on a working PC (PIV or higher)to disassemble and assemble back to working condition and install Windows and Linux on the same PC. Students are suggested to work similar tasks in the Laptop scenario wherever possible.

CHAPTER – I: PC Hardware

Task – 1:

Identify the peripherals of a computer, components in a CPU and its functions. Draw the block diagram of the CPU along with the configuration of each peripheral and submit to your instructor

Task – 2:

Every student should disassemble and assemble the PC back to working condition. Lab instructors should verify the work and follow it up with a Viva. Also students need to go through the video which shows the process of assembling a PC. A video shall be given as part of the course content

Task – 3:

Every student should individually install MS windows on the personal computer. Lab instructor should verify the installation and follow it up with a Viva

Task – 4:

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 and followed up with a Viva

Task – 5:

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 up with a Viva.

CHAPTER - II: Word Processor

Task – 1:

Introduction to Ms Word, importance of Word as Word Processor, overview of toolbars, saving, accessing files, using help and resources.

Task – 2:

To create project certificate. Features to be covered:-Formatting Fonts in word, Drop Cap in word, Applying Text effects, Using Character Spacing, Borders and Colors, Inserting Header and Footer, Using Date and Time option in both LaTeX and Word.

CHAPTER –III: Spread Sheets

Task –1:

The mentor needs to tell the importance of MS office 2007/ equivalent (FOSS) tool Excel as a Spreadsheet tool, give the details of the four tasks and features that would be covered in each. Using Excel – Accessing, overview of toolbars, saving excel files, Using help and resources.

Task –2:

Features to be covered:- Gridlines, Format Cells, Summation, auto fill, Formatting Text

Task –3:

Create student marks list for 10 students using for the formulas

CHAPTER –IV: Presentation

Task –1:

Students will be working on basic power point utilities and tools which help them create basic power point presentation. Topic covered during this Exercise includes :- PPT Orientation, Slide Layouts, Inserting Text, Word Art, Formatting Text, Bullets and Numbering, Auto Shapes, Lines and Arrows in both LaTeX and Powerpoint. Students will be given model power point presentation which needs to be replicated (exactly how it's asked).

Task –2:

Second Exercise helps students in making their presentations interactive. Topic covered during this Exercise includes : Hyperlinks, Inserting –Images, Clip Art, Audio, Video, Objects, Tables and Charts

CHAPTER – V: Internet & World Wide Web

Task –1:

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.

Task –2:

Web Browsers, Surfing the Web: Students customize their web browsers with the LAN proxy settings, bookmarks, search toolbars and pop up blockers.

Task –3:

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 by the student to the satisfaction of instructors.

Task – 4:

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 an antivirus software, configure their personal firewall and windows update on their computer.

Text Books:

1. ITL Education Solutions limited, Introduction to Information Technology, Pearson Education,2005.
2. Peter Norton, Introduction to Computers, 6/e Mc Graw Hill

Reference Books:

1. Leslie Lamport, LaTeX Companion –PHI/Pearson.
2. Scott Muller QUE, Upgrading and Repairing, PC's 18th e, Pearson Education,2007.
3. Vikas Gupta, Comdex Information Technology course tool kit, WILEY Dreamtech
4. David Anfinson and Ken Quamme. IT Essentials PC Hardware and Software Companion Guide, Third Edition by– CISCO Press, Pearson Education,2008.

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(13HS112) ENGINEERING PHYSICS AND ENGINEERING CHEMISTRY LAB

Objectives: Educate the theoretical concepts experimentally.

ENGINEERING PHYSICS LAB

1. Dispersive power of the prism – Spectrometer.
2. Determination of wavelength of given source- Spectrometer-Normal Incidence Method.
3. Determination of wavelength of a laser source - Diffraction Grating.
4. Determination of particle size by using a laser source.
5. Newton's Rings.
6. Magnetic field along the axis of a current carrying coil – Stewart and Gee's method.
7. Numerical aperture of an optical fiber.
8. B – H Curve.
9. Energy gap of a material of p-n junction
10. Determination of rigidity modulus of a wire material – Torsional pendulum
11. Melde's experiment – Transverse & Longitudinal modes.
12. Hall Effect

ENGINEERING CHEMISTRY LAB

1. Preparation of Standard Potassium Dichromate and Estimation of Ferrous Iron.
2. Preparation of Standard Potassium Dichromate and Estimation of Copper, by Iodometry.
3. Preparation of Standard EDTA solution and Estimation of Hardness of Water.
4. Determination of Alkanity of water.
5. Preparation of Standard EDTA and Estimation of Copper
6. Determination of strength of the given Strong acid and weak acid against standard strong base solution by Conductometric titration
7. Determination of viscosity of the oils through Redwood viscometer (i) and (ii)
8. Flash point and Fire point apparatus.
9. Estimation of dissolved oxygen through Winklers method.
10. Preparation of phenol-formaldehyde resin (Bakelite)
11. Determination of Chlorine in Bleching powder and Iodine in Iodised salt.
12. Estimation of Chloride ion using potassium chromate indicator by mhor's method.

Reference Books:

1. J. Mendham et al ,Vogel's Text book of Quantitative Chemical Analysis, Sixth Edition, 2012, Pearson Education,.
2. K.B.Chandra Sekhar, G.V. Subba Reddy and K.N.Jayaveera, Chemistry Practical – Lab Manual ,SM Publications, 3rd Edition, 2012Hyderabad.
3. Vogel's Book of Quantitative Inorganic Analysis, ELBS Edition.

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I B.Tech (CSE)	L	T	P	[C]
	0	0	3	[4]

(13HS113) ENGLISH LANGUAGE AND COMMUNICATION SKILLS LAB

Objectives: To equip students with effective speaking and listening skills in English, help them develop the soft skills and people skills which will make them to excel in their jobs and enhance to students' performs at placement interviews

UNIT – I:
Activity– 1: Introduction to the Sounds of English- Vowels, Diphthongs & Consonants.
Activity– 2: Situational Dialogues (Giving Directions etc.)

UNIT – II:
Activity– 3: Speaking on the mobiles and telephone conversation
Activity– 4: Role Play
Activity– 5: 'Just A Minute' Sessions (JAM).

UNIT – III:
Activity– 6: Describing Objects / Situations / People in spoken and written formats.
Activity– 7: Information Transfer

UNIT – IV:
Activity– 8: Debate & Group Discussion.
Activity– 9: Reading Comprehension

Reference:

1. Daniel Jones, English Pronouncing Dictionary, Current Edition with CD.
2. R. K. Bansal and J. B. Harrison, Spoken English, Orient Longman 2006 Edn.
3. Krishna Mohan & NP Singh, Speaking English Effectively, (Macmillan)
4. J. Sethi, Kamlesh Sadanand & D.V. Jindal, A Practical Course in English Pronunciation, (with two Audio cassettes), Prentice-Hall of India Pvt. Ltd., New Delhi.
5. Dr Shalini Verma , Body Language- Your Success Mantra , S.Chand & Co, 2008
6. English Dictionary for Advanced Learners, (with CD) International edn. Macmillan 2009

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II B.Tech I Semester (CSE)	L	T	P	[C]
	3	0	0	[3]

(13HS115) PROBABILITY AND STATISTICS

Objective: The Subject is aimed at developing the basic mathematical skills of engineering students that are imperative for effective understanding of engineering subjects. The topics introduced will serve as basic tools for specialized studies in many engineering fields.

UNIT – I:
Probability & Random Variables:
Conditional probability – Baye's theorem – Discrete and continuous random variables – Distributions – Distribution functions - Binomial – Poisson – Normal distributions.

UNIT – II:
Correlation and Regression : Simple linear Regression – Curvilinear and polynomial regression – Correlation – Testing of Hypothesis about the population correlation co-efficient – Line of regression – Rank correlation co-efficient – Correlation co-efficient for Grouped data.

UNIT – III:
Test of Hypothesis : Population and sample – Confidence interval of mean from normal distribution – Statistical Hypothesis – Null and Alternative Hypothesis – Level of Significance – Test of Significance – Test based on normal distribution – Z – test for means and proportions ; small samples – t-test for one sample and two sample problems and paired t –test, F – test and Chi squared test (testing of goodness of fit and independence.

UNIT – IV:
Statistical Quality Control: Concept of Quality of a manufacture product – Defects and defectives – causes of variations – Random and assignable
Queuing theory – Pure Birth and Death process – M/M/1 and their related simple problems

Text Books:
1. E. Keshava Reddy & E Rukmangadachari ,Probability and Statistics , Pearson Education.
2. Dr J Ravichandran ,Probability and Statistics– Wiley – India Publishers

Reference Books:
1. TKV Iyengar et al ,Probability and Statistics , S.Chnad Publications
2. B.S.Grewal ,Higher Engineering Mathematics, 42 Edition(2012), Khanna publishers.
3. Erwin Kreyszig ,Advanced Engineering Mathematics, 10th Edition(2013),Wiley India

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II B.Tech I Semester (CSE)	L	T	P	[C]
	2	0	0	[2]

(13HS120) PROFESSIONAL ETHICS AND HUMAN VALUES

Objectives:

- To create an awareness on Engineering Ethics and Human Values
- To instill Moral and Social Values and Loyalty
- To appreciate the rights of others.

UNIT-I:

Human Values: Morals, Values and Ethics – Integrity – Work Ethic – Service Learning – Civic Virtue – Respect for Others – Living Peacefully – caring – Sharing – Honesty – Courage – Valuing Time – Co-operation – Commitment – Empathy – Self-Confidence – Character – Spirituality

UNIT-II:

Engineering Ethics: Senses of 'Engineering Ethics' - variety of moral issued - types of inquiry - moral dilemmas - moral autonomy - Kohlberg's theory - Gilligan's theory - consensus and controversy – Models of Professional Roles - theories about right action - Self-interest - customs and religion - uses of ethical theories.

UNIT-III:

Engineering as Social Experimentation: Engineering as experimentation - engineers as responsible experimenters - codes of ethics - a balanced outlook on law - the challenger case study

UNIT-IV:

Safety, Responsibilities and Rights: Safety and risk - assessment of safety and risk - risk benefit analysis and reducing risk - the Three Mile Island and Chernobyl case studies.
Collegiality and loyalty - respect for authority - collective bargaining - confidentiality - conflicts of interest - occupational crime - professional rights - employee rights - Intellectual Property Rights (IPR) - discrimination.

Text Books:

1. Mike Martin and Roland Schinzinger, “Ethics in Engineering”, McGraw-Hill, New York 1996.
2. Govindarajan M, Natarajan S, Senthil Kumar V. S, “Engineering Ethics”, Prentice Hall of India, New Delhi, 2004.

Reference Books:

1. Charles D. Fleddermann, “Engineering Ethics”, Pearson Education / Prentice Hall, New Jersey, 2004 (Indian Reprint)
2. Charles E Harris, Michael S. Protchard and Michael J Rabins, “Engineering Ethics – Concepts and Cases”, Wadsworth Thompson Learning, United States, 2000 (Indian Reprint now available)
3. John R Boatright, “Ethics and the Conduct of Business”, Pearson Education, New Delhi, 2003.
4. Edmund G Seebauer and Robert L Barry, “Fundamentals of Ethics for Scientists and Engineers”, Oxford University Press, Oxford, 2001.

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II B.Tech I Semester (CSE)	L	T	P	[C]
	3	0	0	[3]

(13CS301) BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

Objectives: Because of dependency on electricity in day to day life, a reasonable understanding of the basics of applied electricity is important for every Engineer. The course content enables students to understand the fundamentals of electricity and magnetism, and get a comprehensive idea about circuit analysis and working principles of electrical machines.

UNIT-I:

Introduction to Electrical Engineering:

Electric current, potential and potential difference, electromotive force, electric power, ohm‟s law, basic circuit components, electromagnetism related laws, Magnetic field due to electric current flow, force on a current carrying conductor placed in a magnetic field, Faradays laws of electromagnetic induction. Self-inductance and mutual inductance, Types of induced e.m.f, Kirchhoff‟s laws. Simple problems.

Network Analysis: Basic definitions, types of elements, types of sources, resistive networks, inductive networks, capacitive networks, and series parallel circuits, star delta and delta star transformation (simple problems on above topics).

UNIT-II:

Network Theorems (only on DC and Independent Sources):

Superposition, Thevenin's, Maximum power transfer theorems and simple problems.

Alternating Quantities:

Principle of ac voltages , waveforms and basic definitions, relationship between frequency, speed and number of poles, root mean square and average values of alternating currents and voltage, form factor and peak factor, phasor representation of alternating quantities, the „j‟ operator and phasor algebra, analysis of AC circuits with single basic network element, single phase series circuits, single phase parallel circuits, single phase series parallel circuits, power in ac circuits.

UNIT-III:

DC Machines:

DC Generator:

Principle of operation of dc generator, Types of DC generators, EMF equation of a dc generator ,OCC of a DC Shunt Generator(Simple problems).

DC Motor:

Principle of operation of DC motor, Types of DC Motors, back emf, Torque equation, losses & efficiency calculation, Swinburne's test

UNIT-IV:

A.C Machines:

Transformers : Principles of operation, Constructional Details, Ideal Transformer and Practical Transformer, EMF equation, Losses, Transformer tests (OC and SC), efficiency and regulation calculations (simple problems)

Three phase induction motor:

Construction and principle of operation, slip and rotor frequency, Slip-torque Characteristics(Simple Problems).

Text Books:

1. T K Nagasarkar, and M.S. Sukhija, Basic Electrical Engineering, Oxford University Press. Second Edition 2007
2. M.S.Naidu and S. Kamakshiah, Basic Electrical Engineering. TMH.3rd Edition 2009

Reference Books:

1. D P Kothari and I.J. Nagrath, Theory and solutions of Basic Electrical Engineering. PHI.2010
2. B.L Theraja&A.K.Theraja, "A Text Book of Electrical Technology", 23rd Revised Edition, S.Chand & Company Ltd., New Delhi, 2005.
3. H Cotton, "Advanced Electrical Technology", AH Wheeler & Co., 1990. Eugene C Lister, "Electric Circuits and Machines", New York, MCGraw-Hill, 1975.
4. V N Mittle & I Arvind Mittal, "Basic Electrical Technology",TMH 2nd edition, 2006.
5. JB Gupta, "A Course in Electrical Technology", S K Kataria& Sons, 2003.

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II B.Tech I Semester (CSE)	L	T	P	[C]
	3	1	0	[3]

(13CS302) ELECTRONIC DEVICES AND CIRCUITS

Objectives: Students undergoing this course are expected to:

- Know the formation and properties of semiconductor materials & Understand the operation of diode
- Understand various types of rectifiers and Understand the importance of regulators
- Explain the operation of transistor and Know the need for biasing of transistor
- Explain the operation of transistor as amplifier.

UNIT- I:

Semiconductor Physics &P-N Junction Diode: Semiconductor Materials ,Intrinsic & Extrinsic Materials ,Doping Concentrations ,Continuity equation, Drift &diffusion velocity ,Hall effect, P-N junction Manufacturing types, diode equation, V-I characteristics ,Temperature dependence, Static & Dynamic resistance, Diode equivalent Circuit, Break down mechanism, Zener diode and its characteristic. Study of Photo Diode, Varactor diode, and Schottky diode

UNIT- II:

Rectifiers and Filters: P-N junction as rectifier ,Half wave ,Full wave (center tap, Bridge)rectifiers, Average current, RMS current, Rectifiers efficiency, Ripple factor ,Form Factor, Percentage of regulation, Peak inverse voltage, Problems on rectifiers.

Filters: Capacitor, Inductor Filters-section filter, π-Section filter, Problems on filters, Zener diode as voltage regulator

UNIT- III:

BJT, Transistor Biasing & Stabilization:

Transistor construction, Operation and Configurations, V-I Characteristics, Relation between Transistor Parameters(α,β,γ), Comparison between BJT Configurations ,Analysis of Q-points and Load Lines(AC,DC), Need for Biasing, Types of Biasing Techniques and their stabilization factors (I_{CEO},V_{BE}, β &S) , Thermal runaway ,Problems on Biasing , BJT as Switch and Amplifier.

UNIT- IV:

Field Effect Transistor: Introduction to FET, Types of FETs, Construction, Operations and Characteristics of JFET and MOSFET, FET Configurations, Comparison of JFET &MOSFET, Comparison between BJT and FET. Biasing of JFET and MOSFET, Problems on biasing. Principal of operation and Characteristics of UJT.

Text Books:

1. Jacob Millman, Christos C Halkias & Satyabratajit, Electronic Devices and Circuits, 2nd ed., TMH,2008.
2. Robert L Boylested and Louis Nashelsky, Electronic Devices and Circuit Theory, 9th ed., Pearson India, 2007.

Reference Books:

1. NN Bhargava, DC Kulshrestha and SC Gupta , Basic Electronics and Linear Circuits, 1st ed., TMH, 2003.
2. Millman and Grabel , Microelectronics, 2nd ed., Tata McGraw Hill, 1988.

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II B.Tech I Semester (CSE)	L	T	P	[C]
	3	0	0	[3]

(13CS303) DIGITAL LOGIC DESIGN

Objectives: The Objective of this course is to acquire the knowledge about simplifying the circuits by different methods. The students will learn about combinational and sequential circuits analysis and design, digital circuit design optimization methods using random logic gates, multiplexers, decoders, registers, basic flip-flops ,counters and programmable logic arrays .They can analyze memory devices. They can go through different types of design tools.

UNIT-I:

Binary Systems: Digital Systems, Binary Numbers, Number base conversions, Octal and Hexadecimal Numbers, complements, Signed binary numbers, Binary codes, Binary logic.

Boolean Algebra and Logic Gates: Basic Definitions, Axiomatic definition of Boolean Algebra, Basic theorems and properties of Boolean algebra, Boolean functions canonical and standard forms, Digital logic gates.

UNIT-II:

Gate – Level Minimization: The Map method, Two-variable and Three-variable Map, Four-variable and Five-Variable Map, Tabular Method, product of sums simplification, Don't-care conditions, NAND and NOR implementation, other Two-level implementations.

Combinational Logic: Combinational Circuits, Analysis procedure, Design procedure, Adders, Subtractors, Code conversions, Binary multiplier, comparators, Decoders, Encoders, Multiplexers.

UNIT – III:

Synchronous Sequential Logic: Sequential circuits, latches, Flip-Flops, Analysis of clocked sequential circuits, State tables and State diagrams, State Reduction and Assignment, Flip-Flop Excitation tables, Design Procedure**.**

Asynchronous Sequential Logic: Introduction, Analysis procedure, design procedure, Primitive flow & Transition tables, Reduction of State and Flow Tables, Types of Hazards.

UNIT – IV:

Registers and Counters: Registers, shift Registers, Ripple counters, synchronous counters, other counters.

Memories and Programmable Logic: Introduction, Random-Access Memory, Types of RAM's, Read-only memory, Types of ROM's, Error Detection and correction, Programmable logic Array(PLA), Programmable Array logic(PAL), Sequential Programmable Devices.

Text Books:

1. M. Morris Mano & Michael D. Ciletti, DIGITAL LOGIC DESIGN , Fourth Edition, Pearson Education / PHI.

Reference Books:

1. R.P.Jain ,Modern Digital Electronics ,Third edition , Tata McGraw Hill.
2. Charles H. Roth, Fundamentals Of Logic Design, Fifth Edition, Thomson.
3. A.Anandkumar, Fundamentals of digital circuits, Fourth edition, PHI.
4. Adicherla Mallesh, Switching Theory and Logic Design, Professional education group.

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(13CS304) OBJECT ORIENTED PROGRAMMING THROUGH C++

Objectives:

- Object orientation is a new approach to understand the complexities of the real world.
- In contrast to the earlier approaches like procedural etc, object orientation helps to formulate the problems in a better way giving high reliability, adaptability and extensibility to the applications.
- The students are already familiar with this concept of programming in C which is the basic for C++.
- This course offers the modern programming language C++ that shall help the students to implement the various concept of object orientation practically.
- The students will be able to programme in the object oriented technology with the usage of C++.

UNIT- I:

Programming Paradigms: Disadvantages of Conventional programming, Object-Oriented Programming, Key concepts of Object oriented programming, Advantages of OOP, Object-Oriented Languages, Object based languages. Evolution of C++

Input and Output in C++ - cin and cout statements.

C++ Declarations: Parts of a C++ program, Tokens, Data Types – Basic, derived, User defined, void. Variable Declaration and Initialization, Dynamic Initialization of variables, Reference variables, Constants, operators, Memory management operators.

Control Structures- if-else, Nested if-else, jump, goto, break, continue, while, do-while, for, switch-case.

UNIT- II:

Functions: Introduction, main() function, parts of functions, passing parameters, Return by reference, default arguments, inline functions, function overloading, precautions with overloading.

Class Overview: Structures in C and C++, classes in C++, class declaration, Access specifiers, defining, member functions, Object creation, memory allocation to class members, Accessing of class members. Static Class Members: Static member variables, Static Member Functions, static objects. Passing objects as arguments, Returning objects, Friend functions – characteristics, friendly classes, Friend function bridge between two classes.

UNIT- III:

Generic Programming with Templates: Need of templates, function templates, function templates with more arguments, overloading of Template Functions, class templates, class templates with more arguments, Guidelines for templates.

Constructor and Destructor: Characteristics, Constructors with arguments, Constructors with default arguments, Copy Constructor, Constructor overloading, Destructors, Dynamic Initialization using constructors, Recursive Constructor.

Operator Overloading: Operator Overloading Fundamentals, Operator function, Overloading unary and binary operators, type conversions, Rules for overloading operators.

UNIT- IV:

Inheritance: Base class & derived class, Access specifiers and simple inheritance , types of inheritance- single, multi level, multiple, Hierarchical, hybrid, multipath, virtual base classes, Constructor and destructor in derived class. Advantages and disadvantages of Inheritance.

Polymorphism: Binding in C++, Pointer to derived class objects, Virtual functions – Runtime polymorphism using virtual functions, pure virtual functions, and Abstract classes.

Exception handling: Principles, keywords. Exception Handling Mechanism

I/O Streams: Console I/O-Unformatted I/O, and formatted I/O. File I/O-opening and closing a file

Text Books:

1. Ashok N. Kamthane ,Object Oriented Programming with *C++*, Pearson Education India, 2003.

Reference Books:

1. Herbert Schildt, C++ the Complete Reference , Third edition, Tata McGraw Hill, 1999
2. Barkakatin ,objects oriented programming in C++, PHI ,1995.
3. Lafore ,Object Oriented Programming In C++, Fourth Edition, PEARSON EDUCATION.
4. Herbert Schildt , C++: The Complete Reference, Forth Edition, Tata McGraw Hill.
5. Bjarne stroustup ,The C++ Programming Language ,Special Edition.

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	3	1	0	[3]

(13CS305) DATA STRUCTURES

Objectives: The objective of this course is to teach students various data structures and to explain them algorithms for performing various operations on these data structures.
The course aims are:

- Demonstrate familiarity with major algorithms and data structures.
- Analyze performance of algorithms.
- Choose the appropriate data structure and algorithm design method for a specified application.
- Determine which algorithm or data structure to use in different scenarios.
- Be familiar with writing recursive methods.

UNIT- I:
Introduction to Algorithms: performance analysis- time complexity and space complexity, Asymptotic notations and their significance.
Introduction to Data structures: Data Objects and structures,
Arrays- ADT, Indexing a C++ array, Row- and Column- major mappings, row major and column major representations.
Linear List- Linear List Data structure.
Array Representation: inserting element, removing an element. Multiple Lists in a single Array.
Linked representation: singly Linked List – Representation, creating list, traversing, insertion, deletion.

UNIT-II:
Other Linked Lists: Doubly linked list- Representation, creating list, traversing, insertion, deletion. circular linked list and Header Nodes, Applications.
Stacks: Definitions, Abstract Data Type, Array representation, Linked representation, infix to post fix conversion, postfix expression evaluation, recursion using Stack.
Queues: Definitions, Abstract Data Type, Array representation, Linked representation, Applications. Double Ended queue, circular queue, applications.

UNIT- III:
Non-Linear Data Structures
Tree: Definition, Tree representation.
Binary tree - definitions and properties, representation of binary tree, operations on binary tree, binary tree traversal – in order, pre order, post order and level order. Binary tree ADT.
Binary Search Trees: Definition, ADT, Operations- Searching, Inserting an element, Deleting an element, and Height of Binary search tree. Indexed Binary Search Tree.
Balanced Search Trees: Introduction, AVL Trees: Definition, Height of an AVL Tree, Representation of AVL tree, Searching an AVL search tree, Inserting into AVL search tree, Deleting AVL search tree**.**

UNIT-IV:
Balanced Search Trees: Red –Black trees: properties, Operations- Searching, Insertion and Deletion, Splay Trees, B-Trees: B-Tree of order m, height of a B-Tree, insertion, deletion and searching. Comparison of Search Trees.

Priority Queues: Definition, ADT, Realizing a Priority Queue using Heaps, Definition, insertion, Deletion

Searching – Linear, Fibonacci and binary search methods. **Sorting** – Bubble sort, selection sort, Insertion sort, Quick sort, merge sort, heap sort.

Text Books:

1. S.Sahni, 'Data structures, Algorithms and Applications in C++', University Press (India) Pvt.Ltd, 2nd edition.

Reference Books:

1. Seymour lipschutz 'Theory and Problems of Data Structures' - schaum's outline series. TMH

2. G A V Pai, 'Data Structures and Algorithms: Concepts, Techniques and Applications' Tata McGraw-Hill, 2008 Second edition

3. Mark Allen Weiss, 'Data structures and Algorithm Analysis in C++ ', Pearson Education. Ltd. ,Second Edition.

4. Ellis Horowitz, Sartaj Sahni, Dinesh Mehta, 'Fundamentals of Data Structure in C++', second edition

5. Yashvanth Kanetkar, ' Data structures through C++' bpb publications

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	0	0	3	[2]

(13CS306) BASIC ELECTRICAL AND ELECTRONICS LAB

Objectives: To understand the concepts of electric circuits and the performance characteristics of machines. This laboratory course will give a thorough knowledge about the basics of circuit analysis, DC machines and transformers.

List of Experiments:

PART –A: ELECTRICAL LAB

1. Verification of Superposition theorem
2. Verification of Thevenin`s and Norton`s Equivalent circuits and Verification by direct Test
3. Magnetization characteristics of DC Shunt Generator. Determination of critical Resistance.
4. Swinburne`s Test on DC Shunt machine(Predetermination of efficiency of a given DC shunt machine working as motor and generator)
5. Brake Test on DC Shunt Motor. Determination of performance characteristics
6. OC and SC Test on single phase Transformer(Predetermination of efficiency and regulation at given power factors and determination of Equivalent circuit)

PART –B: ELECTRONICS LAB

1. Identification, Specifications and Testing of R, L, C components (colour codes),Potentiometers, Switches (SPDT, DPDT and DIP), Coils, Gang Condensers, Relays, Bread Boards, Identification and Specifications of active devices, Diodes, BJTs, Lowpower JFETs, MOSFETs, LEDs, LCDs, SCR, UJT, Linear and Digital Ics.
2. PN Junction Diode Characteristics (Forward bias, Reverse bias).
3. Zener Diode Characteristics and Zener as regulator.
4. Transistor CE Characteristics (Input and Output).
5. Rectifier without Filters (Full wave & Half wave).
6. Rectifier with Filters (Full wave & Half wave)

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(13CS307) DATA STRUCTURES LAB

Objectives:

- To develop skills to design and analyze simple linear and non linear data structures
- To Strengthen the ability to identify and apply the suitable data structure for the given real world problem
- To Gain knowledge in practical applications of data structures
- To make the student write ADTS for all data structures.

Recommended Systems/Software Requirements:

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

1. Write a C/C++ Program to perform the following operations on Singly linked list
   i) creation ii) insertion iii) deletion iv) search v) display
2. Write a C/C++ Program to perform the following operations on doubly linked list
   i) creation ii) insertion iii) deletion iv) search v) display
3. Write C/C++ programs to implement the Stack using an array and Singly Linked List.
4. Write a C/C++ program that uses Stack operations to perform the following:
   i) Converting infix expression into postfix expression
   ii) Evaluating the postfix expression
5. Write C/C++ programs to implement the Queue using an array and Singly Linked List.
6. Write C/C++ programs to implement the deque (double ended queue) using a doubly linked list.
7. Write a C/C++ program to create binary tree and traverse the binary tree in
   i) Pre order ii) In order iii) Post order
   (Write both recursive and non recursive functions)
8. Write a C/C++ program to perform the following operations on Binary Search Tree:
   a) Insert ion b) Deletion c) Search d) Ascend e) Height
9. Write C/C++ programs to implement the following search methods
   i) Linear Search ii) Binary search
10. Write C/C++ programs for implementing the following sorting methods:
    i) Bubble sort ii) Selection Sort
11. Write C/C++ Programs for implementing the following sorting methods
    i) Insertion ii) Quick sort
12. Write C++ programs for implementing the following sorting methods
    i) Heap Sort ii) merge sort

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(13CS308) OBJECT ORIENTED PROGRAMMING THROUGH C++ LAB

Objectives:

- Object-oriented programming (OOP) is a programming paradigm that uses abstraction to create models based on the real world.
- It utilizes several techniques from previously established paradigms, including modularity, polymorphism, and encapsulation.
- Object-oriented programming is intended to promote greater flexibility and maintainability in programming, and is widely popular in large-scale software engineering.

WEEK 1:

1. Raising a number n to a power p is the same as multiplying n by itself p times. Write a function called power ( ) that takes a double value for n and an int value for p, and returns the result as double value. Use a default argument of 2 for p, so that if this argument is omitted, the number will be squared. Write a main ( ) function that gets values from the user to test this function.

WEEK 2:

2. A point on the two dimensional plane can be represented by two numbers: an X coordinate and a Y coordinate. For example, (4,5) represents a point 4 units to the right of the origin along the X axis and 5 units up the Y axis. The sum of two points can be defined as a new point whose X coordinate is the sum of the X coordinates of the points and whose Y coordinate is the sum of their Y coordinates. Write a program that uses a structure called point to model a point. Define three points, and have the user input values to two of them. Than set the third point equal to the sum of the other two, and display the value of the new point. Interaction with the program might look like this:
Enter coordinates for P1: 3, 4
Enter coordinates for P2: 5 7 Coordinates of p1 + P2 are: 8, 11

WEEK 3:

3. Create the equivalent of a four function calculator. The program should request the user to enter a number, an operator, and another number. It should then carry out thebspecified arithmetical operation: adding, subtracting, multiplying, or dividing the two numbers. (It should use a switch statement to select the operation). Finally it should display the result.
When it finishes the calculation, the program should ask if the user wants to do another calculation. The response can be Y or N . Some sample interaction with the program might look like this.
Enter first number, operator, second number: 10/ 3 Answer = 3.333333
Do another (Y/ N)? Y
Enter first number, operator, second number 12 + 100 Answer = 112
Do another (Y/ N) ? N

WEEK 4:

4. A phone number, such as (212) 767-8900, can be thought of as having three parts: the area code (212), the exchange (767) and the number (8900).
Write a program that uses a structure to store these three parts of a phone number separately. Call the structure phone. Create two structure variables of type phone. Initialize one, and have the user input a number for the other one. Then display both numbers. The interchange might look like this :

Enter your area code, exchange, and number: 415 555 1212
My number is (212) 767-8900
Your number is (415) 555-1212

WEEK 5:

5. Create two classes DM and DB which store the value of distances. DM stores distances in meters and centimeters and DB in feet and inches. Write a program that can read values for the class objects and add one object of DM with another object of DB.
Use a friend function to carry out the addition operation. The object that stores the results may be DM object or DB object, depending on the units in which the results are required.
The display should be in the format of feet and inches or metres and cenitmetres depending on the object on display.

WEEK 6:

6. Create a class rational which represents a numerical value by two double values-NUMERATOR & DENOMINATOR. Include the following public member Functions:
Constructor with no arguments (default).
Constructor with two arguments.
void reduce( ) that reduces the rational number by eliminating the highest common factor between the numerator and denominator.
Overload + operator to add two rational number.
Overload >> operator to enable input through cin.
Overload << operator to enable output through cout.
Write a main ( ) to test all the functions in the class.

WEEK 7:

7. Consider the following class definition
class father {
protected : int age; public;
father (int x) {age = x;} virtual void iam ( )
{ cout < < I AM THE FATHER, my age is : << age<< end1:} };
Derive the two classes son and daughter from the above class and for each, define iam ( ) to write our similar but appropriate messages. You should also define suitable constructors for these classes. Now, write a main ( ) that creates objects of the three classes and then calls iam ( ) for them. Declare pointer to father. Successively, assign addresses of objects of the two derived classes to this pointer and in each case, call iam ( ) through the pointer to demonstrate polymorphism in action.

WEEK 8:

8. Write a program that creates a binary file by reading the data for the students from the terminal. The data of each student consist of roll no., name (a string of 30 or lesser no. of characters) and marks.

WEEK 9:

9. A hospital wants to create a database regarding its indoor patients. The information to store include

a) Name of the patient
b) Date of admission
c) Disease
d) Date of discharge

Create a structure to store the date (year, month and date as its members). Create a base class to store the above information. The member function should include functions to enter information and display a list of all the patients in the database. Create a derived class to store the age of the patients. List the information about all the to store the age of the patients. List the information about all the pediatric patients (less than twelve years in age).

WEEK 10:

10. Make a class Employee with a name and salary. Make a class Manager inherit from Employee. Add an instance variable, named department, of type string. Supply a method to string that prints the manager s name, department and salary. Make a class Executive inherit from Manager. Supply a method to String that prints the string Executive followed by the information stored in the Manager superclass object. Supply a test program that tests these classes and methods.

WEEK 11:

11. Imagine a tollbooth with a class called toll Booth. The two data items are a type unsigned in to hold the total number of cars, and a type double to hold the total amount of money collected. A constructor initializes both these to 0. A member function called payingCar ( ) increments the car total and adds 0.50 to the cash total. Another function, called nopayCar ( ), increments the car total but adds nothing to the cash total. Finally, a member function called displays the two totals.
Include a program to test this class. This program should allow the user to push one key to count a paying car, and another to count a nonpaying car. Pushing the ESC kay should cause the program to print out the total cars and total cash and then exit.

WEEK 12:

12. Write a function called reversit ( ) that reverses a string (an array of char). Use a for loop
that swaps the first and last characters, then the second and next to last characters and so on. The string should be passed to reversit ( ) as an argument.
Write a program to exercise reversit ( ). The program should get a string from the user, call reversit ( ), and print out the result. Use an input method that allows embedded blanks. Test the program with Napoleon s famous phrase, Able was I ere I saw Elba) .

WEEK 13:

13. Create some objects of the string class, and put them in a Deque-some at the head of the Deque and some at the tail. Display the contents of the Deque using the forEach ( )
function and a user written display function. Then search the Deque for a particular string, using the first That ( ) function and display any strings that match. Finally remove all the items from the Deque using the getLeft ( ) function and display each item.
Notice the order in which the items are displayed: Using getLeft ( ), those inserted on the left (head) of the Deque are removed in last in first out order while those put on the right side are removed in first in first out order. The opposite would be true if getRight ( ) were used.

WEEK 14:

14. Create a base class called shape. Use this class to store two double type values that could be used to compute the area of figures. Derive two specific classes called triangle and rectangle from the base shape. Add to the base class, a member function get_data ( ) to initialize base class data members and another member function display_area ( ) to compute and display the area of figures. Make display_area ( ) as a virtual function and redefine this function in the derived classes to suit their requirements.Using these three classes, design a program that will accept dimensions of a triangle or a rectangle interactively and display the area.

Remember the two values given as input will be treated as lengths of two sides in the case of rectangles and as base and height in the case of triangles and used as follows:

Area of rectangle = x * y
Area of triangle = ½ * x * y

Text Books:

1. C++ How to Program by H M Deitel and P J Deitel.
2. Object Oriented Programming in Turbo C++ by Robert Lafore , Press.
3. Programming with C++ By D Ravichandran

Reference Books:

1. Object oriented Programming with C++ by E Balagurusamy.
2. Computing Concepts with C++ Essentials by Horstmann.
3. The Complete Reference in C++ By Herbert Schildt.

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(13HS118) MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS

Objectives: To explain the basic principles of managerial economics, accounting and current business Environment underlying business decision making

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

UNIT- II:
Theory of Production: Production Function – Isoquants and Isocosts, MRTS, Least Cost Combination of Inputs, Cobb-Douglas Production function, Laws of Returns, Internal and External Economies of Scale.
Cost Analysis: Cost concepts, Opportunity cost, Fixed vs. Variable costs, Explicit costs Vs. Implicit costs, Out of pocket costs vs. Imputed costs.
Break-Even Analysis : (BEA)-Determination of Break-Even Point (simple problems)
Market: Types of competition, Price-Output Determination in case of Perfect Competition and Monopoly, Monopolistic competition.
Methods of Pricing: Cost, competition, strategy based pricing

UNIT -III:
Business Types: Business, features, Sole Proprietorships, Partnerships, Joint Stock Companies, Public Enterprises and their types.
Capital and Capital Budgeting: Capital and its significance, Types and sources of raising finance. Nature and scope of Capital Budgeting, Features, Methods: Payback Method, Accounting Rate of Return Method (ARR) and Net Present Value Method (simple problems)

UNIT- IV:
Financial Accounting: Double-Entry Book Keeping, Journal, Ledger, Trial Balance- Final Accounts. (Simple Problems)
Financial Analysis through Ratios: Computation, Analysis and Interpretation of Liquidity Ratios (Current Ratio and quick ratio), Capital structure Ratios (Debt- Equity ratio, Interest Coverage ratio), Activity Ratios (Inventory turnover ratio and Debtor Turnover ratio), and Profitability ratios (Gross Profit Ratio, Net Profit ratio, Operating Ratio, P/E Ratio and EPS), (Simple Problems).

Text Books:
1. Aryasri: **"Managerial Economics and Financial Analysis",** TMH,2nd edition, 2005.
2. SA Siddiqui and AS Siddiqui **"Managerial Economics and Financial Analysis"**, New age international publishers.
3. Varshney & Maheswari: **"Managerial Economics"**, Sultan Chand, 2003.

Codes/Tables: Present Value Tables need to be permitted into the examination Hall.

Reference Books:

1. Raghunatha Reddy & Narasimhachary: **"Managerial Economics& Financial Analysis"**, Scitech,2009
2. V. Rajasekaran & R. Lalitha,**" Financial Accounting"**, Pearson Education, New Delhi,2010.
3. Suma Damodaran, **"Managerial Economics"**, Oxford University Press.
4. Domnick Salvatore: **"Managerial Economics In a Global Economy"**, Thomson, 4th Edition.
5. Subash Sharma & M.P. Vittal, "**Financial Accounting for management**"**, Text & Cases**, Machmillan 2008
6. S.N.Maheswari & S.K. Maheswari,**" Financial Accounting"**, Vikas,2008
7. Truet and Truet: **"Managerial Economics:Analysis", Problems and Cases**, Wiley,2009
8. Dwivedi:**"Managerial Economics"**, Vikas, 6th Edition,2009

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(13CS401) COMPUTER ORGANIZATION

Objectives:

- Students will learn the fundamentals of computer organization. It is relevant to classical & modern problems of computer design.
- Students will be able to identify where, when and how enhancements of computer Performance can be accomplished.
- Students will see how to use concepts of computer in real life setting using various PC performance improvements.
- Understand the mining of ALU, control unit, CPU and its function also in real life.

UNIT- I:

Basic Structure of Computers: Computer Types, Functional unit, Basic operational concepts, Bus structures.

Register Transfer Language and Micro operations: Register Transfer language, Register Transfer, Bus and memory transfers-Three state bus buffer, Memory transfer,

Arithmetic Micro operations- binary adder, binary adder-subtractor, binary incrementer, arithmetic circuit.

Logic micro operations- List of logic micro operations, Hardware implementation, some applications

Shift micro operations- Hardware implementation**.** Arithmetic logic shift unit

UNIT- II:

Basic Computer Organization and Design: Instruction codes- Stored program organization, indirect address.

Computer Registers- Common bus system.

Computer Instructions- Instruction set completeness.

Timing and Control, **Instruction cycle-** Fetch and decode, determine the type of instruction, register-reference instructions, Memory Reference Instructions.

Input – Output and Interrupt- Input-output configuration, Input-output instructions, program interrupt, Interrupt cycle, Addressing modes

Micro Programmed Control: Control memory, Address sequencing- Conditional branching, Mapping of Instruction, subroutines.

Micro Program Example- Computer configuration, Microinstruction Format, Symbolic Microinstructions, The fetch routine, Symbolic Micro program, binary Micro program.

Design of Control Unit- Micro program Sequencer.

UNIT- III:

Input-Output Organization: Peripheral Devices- ASCII Alphanumeric Characters.

Input-Output Interface-I/O Bus and Interface Modules, I/O versus Memory bus, Isolated verses Memory Mapped I/O, Example of I/O Interface.

Asynchronous data transfer- Strobe control, Handshaking, Asynchronous serial transfer, Asynchronous communication interface, First in-First-out buffer**,**

Modes of Transfer- Example of programmed I/O, Interrupt-Initiated I/O, software considerations, **Priority Interrupt-** Daisy chaining priority, Parallel priority Interrupt, Priority Encoder, Interrupt cycle, software routines, Initial and final operations.

Direct memory Access-DMA controller, DMA transfer
Input –Output Processor (IOP) – CPU-IOP communication, IBM 370 I/O channel, Intel 8089 IOP

UNIT- IV:
Memory Organization: Memory Hierarchy, Main memory- RAM and ROM chips, Memory Address map. **Auxiliary memory –** Magnetic Disks, Magnetic Tapes.
Cache Memory – Associative mapping, Direct mapping, Set associative mapping.
Virtual memory- Address space and memory space, address mapping using pages, associative memory page table, page replacement
Pipeline and Vector Processing: Parallel Processing, Pipelining- General Considerations, Arithmetic Pipeline, Instruction Pipeline**-** Data dependency, Handling of Branch Instructions.
Vector processing- Vector operations, matrix multiplication, memory interleaving, superscalar processors, supercomputers

Text Books:

1. Moris Mano, Computer System Architecture-,IIIrd Edition,Pearson/PHI.
2. C. Hamacher, V. Zvonko, S. Zaky, "Computer Organization" 5thedition, McGraw Hill, 2002, ISBN 007-120411-3.

Reference Books:

1. William Stallings, Computer Organization and Architecture- Sixth Edition,Pearson/PHI.
2. Andrew S.Tanenbaum , Structured Computer Organization-4th edition, PHI/Pearson.
3. Sivaraama Dandamudi,Springer , Fundamentals of Computer organization and design- Int. Edition.
4. John L.Hennessy and David A.Patterson, Computer Architecture a Quantitative approach, Fourth Edition, Elsevier.
5. Joseph D.Dumas , Computer Architecture: Fundamentals and principles of computer design II, BS Publication.

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(13CS402) DATABASE MANAGEMENT SYSTEMS

Objectives: The following are the major objectives of this course:

- To expose the student to the basic concepts involved in designing and building a database management system,
- Learn how to use the Structured Query Language (SQL)
- Understand the relational model and relational database management system
- To provide detailed knowledge of Transaction, concurrency and recovery strategies of DBMS.
- To know how normalization is important for DBMS and different normalization Techniques.

UNIT- I:

Databases and Database Users: Introduction, Characteristics of the Database Approach, Actors on the Scene, Workers behind the Scene, advantages of Using the DBMS Approach

Database System Concepts and Architecture: Data Models, Schemas, and Instances, Three-Schema Architecture and Data Independence, Database Languages and Interfaces, The Database System Environment, Centralized and Client/Server Architectures for DBMSs, Classification of Database Management Systems

Data Modeling Using the Entity-Relationship (ER) Model: Entity Types, Entity Sets, Attributes, and Keys, Relationship Types, Relationship Sets, Roles, and Structural Constraints. Weak Entity Types, Refining the ER Design for the COMPANY Database, Notations for ER Diagrams, Relationship Types of Degree Higher than Two

UNIT-II:

The Relational Data Model: Relational Model Concepts, Relational Model Constraints, Relational Database Schemas, Update Operations, Transactions, and Dealing with Constraint Violations [145-165]. Relational Database Design by ER-to-Relational Mapping.

Structured Query Language (SQL): Introduction, SQL data definition and data types, DDL, DML, DCL and TCL Commands- Integrity Rules-Enforcing Integrity constraints. Basic Queries in SQL: SELECT, FROM, WHERE CLAUSES, pattern matching, Arithmetic operators, ordering of query results. More complex SQL queries: comparison using NULL, Nested Queries, correlated Nested Queries, joining tables, Aggregate functions, GROUP BY AND HAVING Clauses, SQL functions, views, Triggers

UNIT-III:

Normalization for Relational Databases: Informal Design Guidelines for Relation Schemas, Functional Dependencies, Normal Forms Based on Primary Keys, General Definitions of Second and Third Normal Forms, Boyce-Codd Normal Form, Multivalued Dependency and Fourth Normal Form, Join Dependencies and Fifth Normal Form

Disk Storage: Introduction, Secondary Storage Devices, Buffering of Blocks. Basic File Structures: Placing File Records on Disk, Operations on Files, Files of Unordered Records (Heap Files) , Files of Ordered Records (Sorted Files), Hashing Techniques, Other Primary File Organizations, RAID Technology

UNIT-IV:

Transaction Processing: Introduction, Transaction and System Concepts, Properties of Transactions, Characterizing Schedules based on recoverability, Characterizing Schedules based on serializability [T1:P611-P636].

Concurrency Control Techniques: Two-Phase Locking Techniques for Concurrency Control, Concurrency Control Based on Timestamp Ordering, Validation (Optimistic) Concurrency Control Techniques, Multiple Granularity Locking [T1:P643-P664].

Database Recovery Techniques: Recovery Concepts, Recovery Based on Deferred Update, Recovery Based on Immediate Update, Shadow Paging, And The ARIES Recovery Algorithm

Text Books:

1. Ramez Elmasri, Shamkant B.Navathe , Fundamentals of Database Systems 5th edition pearson.

Reference Books:

1. Silberchartz,Korth,Sudarshan , Database System Concepts, V Edition,McGraw Hill.
2. Ivan Bayross , SQL,PL/SQL 3rd Ed, BPB Publication.
3. Raghurama Krishnan,Johannes Gehrke , Database Management Systems III Ed, TATA McGrawHill.
4. C.J.Date, Introduction to Database Systems, Pearson Education.
5. The X team,S.Shah and V.shah, Oracle for Professionals, SPD.
6. Shah, Database systems Using Oracle:A simplified guide to SQL and PL/SQL, PHI.
7. M.L.Gillenson , Fundamentals of Database Management Systems,Wiley Student Edition.

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(13CS403) JAVA PROGRAMMING

Objectives: The main objective is to make the student learn about object oriented paradigm, understand to correlate the real life entities in the problem and characterize them as specializations and generalizations

UNIT-I:

Introduction: Need for OOP paradigm, History and Evolution of java, Java buzzwords, data types, variables, arrays, operators, control statements, simple Java program.

Introducing Classes: Class Fundamentals, Declaring objects, Introducing methods, constructors, this keyword, garbage collection, finalize() Method, overloading methods and constructors, Using objects as parameters, Argument passing, Returning objects, recursion, Access Control, Understanding static, Introducing final keyword, Introducing Nested and Inner Classes, Exploring the String class, Using Command-Line Arguments.

UNIT-II:

Inheritance: Inheritance basics, Using super, forms of inheritances, When constructors are called , method overriding, dynamic method dispatch Using abstract classes, using final with inheritance, the Object class.

Packages and Interfaces: Packages, Access Protection, Importing Packages, Interfaces.

The Applet Class: Two Types Of Applets, Applet Basics, Applet Architecture, an Applet Skeleton, Simple Applet Display Methods.

UNIT-III:

Exception Handling and Multithreading: Exception Handling Fundamentals, Exceptions Types, Uncaught Exceptions, Using try and catch, Multiple catch Clauses, Nested try Statements, throw, throws, finally keywords, Java Built-in Exceptions, creating own exception subclasses, Chained Exceptions, Using Exception.

The Java Thread Model: The Main Thread, Creating a Thread, Creating Multiple Threads, Using isAlive() and join(), Thread priorities, Synchronization, Inter thread communication, deadlocks, thread groups, Using Multithreading.

Event Handling: Two Event Handling Mechanisms, Delegation Event Model, Event Classes, Sources of Events, Event Listener Interfaces, Using the Delegation Event Model, Adapter classes.

UNIT-IV:

Software Development Using JAVA

Introducing Swing: The Origins Of Swing, Swing Is Built On The AWT, Two Key Swing Features, The MVC Connection, Components And Containers, The Swing Packages, A Simple Swing Application, Event Handling, Create A Swing Applet.

Exploring Swings : JLabel and ImageIcon, JTextField, the Swing Buttons, JTabbedPane, JScrollPane, JList, JCombobox, Trees, JTable.

Networking and Java Library: Basics of Networking, Inetaddress, TCP/IP sockets, Datagrams, URL, URL connection, String handling, java.util, java.io and java.net packages.

Text Books:

1. Herbert Schildt, The Complete Reference Java J2SE 7th Edition, TMH Publishing Company Ltd, NewDelhi.

Reference Books:

1. H.M.Dietel and P.J.Dietel, Java How to Program, Sixth Edition, Pearson Education/PHI
2. Cay.S.Horstmann and Gary Cornell, Core Java 2, Vol 1, Fundamentals, Seventh Edition, Pearson Education.
3. Cay.S.Horstmann and Gary Cornell, Core Java 2, Vol 2, Advanced Features, Seventh Edition, Pearson Education.
4. Iver Horton, Beginning in Java 2, Wrox Publications.
5. , Somasundaram, Jaico, Java.
6. Cay Horstmann, John Wiley and Sons ,Big Java 2nd Edition,.

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(13CS404) MATHEMATICAL FOUNDATIONS OF COMPUTER SCIENCE

Objectives: The objective of this course is to present the foundations of many basic computer related concepts and provide a coherent development to the students for the courses like Fundamentals of Computer Organization, RDBMS, Data Structures, Analysis of Algorithms, Theory of Computation, Cryptography, Artificial Intelligence and others. This course will enhance the students' ability to think logically and mathematically. It presents Knowledge of basic concepts on sets, different operations on sets, binary operations, functions.

UNIT- I:

Mathematical Logic: Statements and notations, Connectives, Well formed formulas, Truth Tables tautology, equivalence implication, Normal forms, Theory of inference for the statement calculus. Rules of inference, Consistency of premises and indirect method of proof.

Predicate calculus: Predicates, statement functions, variables and quantifiers, predicate formulas, free & bound variables, universe of discourse, inference theory of predicate calculus.

UNIT- II:

Set Theory & Relations: Introduction, Relations and ordering, Properties of binary Relations, Equivalence, Compatibility Relations, Partial ordering, Hasse diagram.

Functions: composition of functions, Inverse Function, Recursive Functions, Lattice and its Properties, Pigeon hole Principles and its application.

Algebraic structures: Algebraic systems, Examples and general properties, Semi groups and monoids, groups, sub groups, Definitions, Examples, homomorphism, Isomorphism and related problems.

UNIT- III:

Elementary Combinatorics: Basis of counting, Enumeration of Combinations & Permutations, Enumerating of Combinations & Permutations with repetitions and constrained repetitions.

Recurrence Relations: Generating Function of Sequences, Calculating Coefficient of generating functions, Recurrence relations, Solving recurrence relation by substitution and Generating functions, The method of Characteristic roots, Solution of Inhomogeneous Recurrence Relation.

UNIT- IV:

Graph Theory: Representation of Graph, Spanning Trees, BFS, DFS, Kruskals Algorithm, Binary 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. J.P Tremblery, R.Manohar, Discrete Mathematical Structures with Applications to computer science ,TMH.
2. J.L.Molt,A.Kandel,T.P.Baker, Discrete Mathematical for computer Scientists & Mathematicians ,PHI.

Reference Books:

1. C L Liu, D P Mohanpatra, Elements of Discrete Mathematics, TMH.
2. Schaum's Outlines,Lipschutz,Lipson , Discrete Mathematics, TMH.

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(13CS405) OPERATING SYSTEMS

Objectives:

- To understand the services provided by and the design of an operating system.
- To understand the structure and organization of the file system.
- To understand what a process is and how processes are synchronized and scheduled.
- To understand different approaches to memory management.
- Students should be able to use system calls for managing processes, memory and the file system.
- Students should understand the data structures and algorithms used to implement an OS.

UNIT – I:

Operating System Overview: Introduction, Operating Systems functions, Distributed systems, Special purpose systems, Operating systems Structures and System calls, Operating System generation.

Process Management: Process Concepts, Process Scheduling Criteria, algorithms and their evaluation, Inter process communication, Threads, Multi threaded models.

Process Synchronization: Critical section problem, Peterson's Solution, Synchronization Hardware, Semaphores, Classic problems of Synchronization, Monitors, Synchronization examples.

UNIT- II:

Dead Lock: System model, Deadlock Characterization, Deadlock Prevention, Detection and Avoidance, Recovery from deadlock.

Memory Management: Swapping, Contiguous memory allocation, Paging, Structure of the Page Table, Segmentation, Virtual memory, Demand paging, Page – Replacement algorithms, Allocation of frames, Thrashing.

UNIT- III:

Storage System Interfaces: Concept of a File, Access methods, Directory Structure, File System mounting, File sharing and protection, Allocation methods, Free space management.

Overview of Mass storage structures: Disk structure, Disk attachment, Disk scheduling, Swap – space management.

I/O Systems, Hardware, Application I/O interface, Kernel I/O sub systems, Transforming I/O requests Hardware operations, STREAMS, Performance.

UNIT- IV:

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, Fire walling to Protect Systems and Networks, Computer Security Classifications.

Text Books:

1. Abraham Silberchatz, Peter B. Galvin, Greg Gange, Operating System Concepts, Eighth edition, John Wiley.

Reference Books:

1. Stallings, Operating Systems: Internals and Design Principles,Sixth Edition–2009, Pearson Education.
2. Andrew S Tanenbaum, Modern Operating Systems,Second Edition, PHI.
3. B.L.Stuart, Cengage learning, Principles of Operating Systems, India Edition.
4. A.S.Godbole, Operating Systems, Second Edition, TMH.
5. R.Elmasri, A,G.Carrick and D.Levine, Operating Systems, Mc Graw Hill.
6. Sibsankar Haldar, Alex A, Aravind, Operating Systems, Pearson Education India.

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(13CS406) OPERATING SYSTEMS LAB

Objectives:

- To understand the services provided by and the design of an operating system.
- To understand the structure and organization of the file system.
- To understand what a process is and how processes are synchronized and scheduled.
- To understand different approaches to memory management.
- Students should be able to use system calls for managing processes, memory and the file system.
- Students should understand the data structures and algorithms used to implement an OS.

List of Experiments:

1) To implement the CPU Scheduling algorithms
   a) FCFS(First Come First Served) b) SJF(Shortest Job First)
   c) RR(Round Robin) Scheduling d) Priority Scheduling
2) To simulate a program for MVT (Multiprogramming Variable Task).
3) To simulate a program for MFT (Multiprogramming Fixed Task).
4) To Implement the Banker's Algorithm for Deadlock Avoidance.
5) To Implement the Banker's Algorithm for Deadlock Prevention.
6) To Implement the Program for File Allocation Methods.

a) Sequential File Allocation b) Indexed File Allocation c) Linked File Allocation.

7) To Simulate all File Organization Techniques
   a) Single level directory b) Two level directory c) Hierarchical d) DAG.
8) To implement a program for Page Replacement Policies.
   a) FIFO (First In First Out) Page Replacement
   b) LRU (Least Recent Used) Page Replacement
   c) Optimal Page Replacement (LFU)
9) To implement a program for Paging Memory Allocation Technique.
10) To implement a program for Segmentation Memory Allocation Technique
11) To implement a program for Shared Memory and IPC.
12) To simulate an algorithm for Deadlock Detection

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(13CS407) JAVA LAB

Objectives:

- To make the student learn a object oriented way of solving problems.
- To teach the student to write programs in Java to solve the problems

WEEK 1:

a) Write a Java program that prints all real solutions to the quadratic equation ax2 + bx + c = 0. Read in a, b, c and use the quadratic formula. If the discriminant b2 -4ac is negative, display a message stating that there are no real solutions.

b) The Fibonacci sequence is defined by the following rule

c) Write a Java program to print the given number is Armstrong or not

d) Write a Java program to find simple Interest.

WEEK 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 find the product of matrices.

c) Write a Java Program that reads a line of integers, and then displays each integer, and the sum of all the integers (Use StringTokenizer class of java.util)

WEEK 3:

a) Write a Java program that checks whether a given string is a palindrome or not. Ex: MALAYALAM is a palindrome.

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

c) Write a Java program to make frequency count of words in a given text.

WEEK 4:

a) Write a Java program that reads a file name from the user, then displays information about whether the file exists, whether the file is readable, whether the file is writable, the type of file and the length of the file in bytes.

b) Write a Java program that reads a file and displays the file on the screen, with a line number before each line.

c) Write a Java program that displays the number of characters, lines and words in a text file.

WEEK 5:

a) Write a Java program that:

i) Implements stack ADT.

ii) Converts infix expression into Postfix form

iii) Evaluates the postfix expression

WEEK 6:

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.

WEEK 7:
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.

WEEK 8:
a) Write a Java program for handling mouse events.

WEEK 9:
a) Write a Java program to illustrate multi-Threading.
b) Write a Java program that correctly implements producer consumer problem using the concept of inter thread communication.

WEEK 10:
Write a program that creates a user interface to perform integer divisions. The user enters two numbers in the textfields, 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.

WEEK 11:
Write a Java program that implements a simple client/server application. The client sends data to a server. The server receives the data, uses it to produce a result, and then sends the result back to the client. The client displays the result on the console. For ex: The data sent from the client is the radius of a circle, and the result produced by the server is the area of the circle. (Use java.net)

WEEK 12:
a) Write a java program that simulates a traffic light. The program lets the user select one of three lights: red, yellow, or green. When a radio button is selected, the light is turned on, and only one light can be on at a time No light is on when the program starts.
b) Write a Java program that allows the user to draw lines, rectangles and ovals.

WEEK 13:

a) Develop with suitable hierarchy, classes for Point, Shape, Rectangle, Square, Circle, Ellipse, Triangle, Polygon, etc. Design a simple test application to demonstrate dynamic polymorphism.

b) 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 78eparated by commas. Write a java program to display the table using Jtable component.

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(13CS408) DATABASE MANAGEMENT SYSTEMS LAB

Objectives:

- Student will able to learn the development of database
- Student will be able to know querying the data fro database

List of Experiments:

1) Practice DDL Commands: Creation, altering and dropping of tables with out and with Integrity Constraints.
2) Practice DML Commands: Inserting, updating and deleting rows of a table and enforce Integrity Constraints.
3) Queries using DISTINCT, AND, OR, NOT, BETWEEN, LIKE, IS NULL, ORDER BY.
   Example:- Select the roll number and name of the student who secured fourth rank in the class.
4) Queries (along with sub Queries) using ANY, ALL, IN, NOT IN, EXISTS, NOTEXISTS, UNION, INTERSET, MINUS.
5) Queries using Aggregate functions (COUNT, SUM, AVG, MAX and MIN), GROUP BY, HAVING and Creation and dropping of Views.
6) Queries using Conversion functions (to_char, to_number and to_date), string functions (Concatenation, lpad, rpad, ltrim, rtrim, lower, upper, initcap, length, substr and instr), date functions (Sysdate, next_day, add months, last_day, months between, least, greatest, trunc, round, to_char, to_date)

7) i)Creation of simple PL/SQL program which includes declaration section, executable section and exception –Handling section (Ex. Student marks can be selected from the table and printed for those who secured first class and an exception can be raised if no records were found)
   ii)Insert data into student table and use COMMIT, ROLLBACK and SAVEPOINT in PL/SQL block.
8) Program development using WHILE LOOPS, FOR LOOPS, nested loops.
9) Programs development using creation of procedures, passing parameters IN and OUT of PROCEDURES.
10) Program development using creation of stored functions, invoke functions in SQL Statements and write complex functions.
11) Develop programs using features parameters in a CURSOR, FOR UPDATE CURSOR, WHERE CURRENT of clause and CURSOR variables.
12) Develop Programs using BEFORE and AFTER Triggers, Row and Statement Triggers and INSTEAD OF Triggers

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(13CS409) TECHNICAL SEMINAR-I

Objectives: To get involved with the latest advancements and developments to enhance communication and presentation skills, exchange of ideas, greater connectivity to develop a research bent of mind.

A Technical Seminar shall have two components, one chosen by the student from the course work as an extension and approved by the faculty supervisor. The other component is suggested by the supervisor and can be a reproduction of the concept in any standard research paper or an extension of concept from earlier course work. A hard copy of the information on seminar topic in the form of a report is to be submitted for evaluation along with presentation. The presentation of the seminar topics shall be made before a committee consisting of Head of the department, seminar supervisor and a senior faculty member. Each Technical Seminar shall be evaluated for 100 marks. Technical Seminar component-I for 50 marks and component-II for 50 marks making total 100 marks. (**Distribution of marks for 50:** 10 marks for report, 10 marks for subject content, 20 marks for presentation and 10 marks for queries).

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2	0	0	[2]

(13HS121) QUALITATIVE AND QUANTITATIVE ANALYSIS

Objectives: To determine and measure the one's ability thorough advanced training, some specific set of skills (intellectual, motor and so on), the subject assumes that professional potential and special abilities developed.

UNIT – I:

Simple Arithmetic -Number - H.C.F. & L.C.M. of Numbers – Decimal Fractions – Simplification – Square Root and Cube Root – Average – Problems on Numbers – Problems on Ages – Percentage – Profit & Loss – Ratio & Proportion-Partnership – Chain Rule – Time & Work – Pipes & Cisterns – Time & Distance – Problems on Trains – Boats & Streams – Allegation or Mixture – Simple Interest – Compound Interest – Area Volume & Surface Areas – Volume & Surface Areas – Calendar – Clocks – Races & Games of Skill – Number Series – Tabulation – Pi –Chart – Bar Diagram – Line Graphs.

UNIT– II:

Reasoning (Verbal and Non-Verbal) -Series Completion – Analogy – Coding–Decoding – Classification – Blood Relations – Puzzle test – Sequential output tracing - Direction Sense test – Logical Venn diagrams – Alphabet test – Alpha-Numeric Sequence puzzle – Number, Ranking and time sequence test – Mathematical operations – Logical sequence of words – Arithmetical reasoning – Insert the missing character – Data sufficiency – Eligibility test – Assertion and reason – Situation reaction test – Verification of Truth of the Statement - –Cubes and dice.

UNIT – III:

Logical deductions, Non verbal reasoning

Logic – Statement-Arguments – Statement-Assumptions – Statement-Course of action – Statement-Conclusions – Deriving conclusion from passages – Theme deduction – Cause and effect reasoning

UNIT – IV:

Reading Comprehension- Purpose of reading, reading rates, improving comprehension skills, techniques for good comprehension, skimming, scanning, determining the meaning of words, different styles of worked out problems.

Text Books:

1. RS Agarwal , A textbook on Quantitative Aptitude.
2. RS Agarwal, A textbook on verbal and nonverbal reasoning .
3. Meenakshi Raman and Sangeeth Sarma, Technical Communication.

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(13CS501) MICROPROCESSORS AND MICROCONTROLLERS

Objective: To learn the basic microprocessor architecture and to gain knowledge on interfacing components with processors and micro controllers

UNIT-I

Introduction: Architecture of 8086 microprocessor, special functions of general purpose registers.8086 flag register and function of 8086 flags, addressing modes of 8086,instruction set of 8086.assembler directives, simple programs, procedures and macros.

Assembly Language Programming: Assembly language programs involving logical, branch and call instructions, sorting, evaluation of arithmetic expressions, string manipulation.

UNIT-II

Details of 8086 & Interfacing: Pin diagram of 8086-Minimum mode and maximum mode of operation, Timing diagram, memory interfacing to 8086(static RAM and EPROM), Need for DMA, DMA data transfer method, Interfacing with 8237/8257.

Programmable Interfacing Devices: 8255 PPI-various modes of operation and interfacing to 8086.interfacing keyboard, displays, 8279 stepper motor and actuators. Interrupt structure of 8086, Vector interrupt table. Interrupt service routines.

UNIT-III

Serial Data Transfer Schemes: Asynchronous and synchronous data transfer schemes.8251 USART architecture and interfacing, TTL to RS232C and RS232C to TTL conversion, Sample program of serial data transfers.

Programmable Interrupt Controllers: 8259 PIC architecture and interfacing, cascading of interrupt controller and its importance, Programming with 8259, Programmable interval timer 8253, Modes of 8253, Programming examples with 8253.

UNIT-IV

8051 Microcontroller and its Programming: Architecture of micro controller-8051 Microcontroller-internal and external memories-counters and timers-synchronous serial-cum asynchronous serial communication-interrupts. Addressing modes of 8051, Instructor set of 8051, Assembly Language Programming examples using 8051.

Text Books:

1.A.K. Ray and K.M.Bhurchandi, Advanced microprocessor and peripherals, 2nd edition, TMH, 2000.
2.Deshmukh, Microcontrollers, Tata Mc-Graw Hill Edition, 2004.
3.Raj kamal, Microcontrollers Architecture, programming, interfacing and system Design, Pearson Education, 2005.

Reference Books:

1. Douglas V.Hall, Microprocessors Interfacing, 2nd edition, 2007.
2. Walter A. Triebel, Avtar Singh, The 8088 and 8086 Microprocessors, PHI, 4th Edition, 2003.
3. Liu and GA Gibson, Micro computer system 8066/8088 family Architecture, programming and Design, PHI, 2nd Ed.
4. Subrata Ghoshal, 8051 Microcontroller-Internals, Instructions, Programming and Interfacing, Pearson, 2010

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(13CS502) PRINCIPLES OF PROGRAMMING LANGUAGES

Objectives:

- To introduce the major programming paradigms, the principles and the techniques involved in design and implementation of modern programming languages.
- To introduce frameworks for specifying and reasoning about programming languages. Learn new languages more quickly and compare programming language designs.

UNIT- I

Preliminaries: Reasons for studying concepts of Programming languages, Programming domains, Language Evaluation Criteria, influences on Language design, Language categories, language design trade offs, Implementation methods, Programming environments. Describing Syntax and Semantics: General Problem of describing Syntax, formal methods of describing syntax, Attribute grammars. Names, Bindings, Type checking, and Scopes: Introduction, names, variables, type checking, scope and Life time.

UNIT- II

Data Types: Introduction, primitive data types, character data types, user defined data types, array types, associative types, record types, union types, pointer and reference types.

Expressions and Assignment Statements: Introduction, Arithmetic expressions, Overloaded Operators, Type conversions, Relational and Boolean expressions, Short circuit evaluation, Assignment Statements, mixed mode assignment. Statement level Control Structures: Selection statements, Iterative Statements, Unconditional Branching, guarded commands.

UNIT -III

Subprograms: Introduction, Fundamentals of sub-programs, Design issues of subprograms, local referencing environments, parameter passing methods, overloaded sub-programs, generic sub-programs, user defined overloaded operators, co routines. Abstract Data types and Encapsulation Constructs: Concept of Abstraction, introductions to data abstraction, design issues for abstract data types. Concurrency: Introduction to subprogram level concurrency, semaphores, monitors, message passing

UNIT -IV

Exception Handling: Introduction to Exception handling, exception handling in C++ and Java. Logic Programming Language; Functional Programming Languages: Introduction, Fundamentals of Functional programming languages, LISP, ML, Haskell, applications of Functional Programming Languages. Logic programming language: Introduction, Basic elements of prolog, application of logic programming.

Text Books:

1. Robert W.Sebesta, Concepts of Programming Languages, Eighth Edition, Pearson Education, 2008.
2. D. A. Watt, Programming Language Design Concepts, Wiley Dreamtech, rp-2007.

Reference Books:

1. A.B. Tucker, R.E. Noonan, Programming Languages, Second Edition, TMH.
2. K. C.Louden, Thomson, Programming Languages, Second Edition, 2003.
3. Patric Henry Winston and Paul Horn, LISP, Pearson Education.
4. W.F. Clocksin and C.S.Mellish, Programming in Prolog, Fifth Edition, Springer.

Web References:

1. www.cs.colostate.edu/~cs454/
2. www.cs.rice.edu/

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(13CS503) COMPUTER NETWORKS

Objectives:

- Ability to apply knowledge of computers, software, networking technologies, and Information assurance to an organization' management.
- Ability to design and analyze the Variable size framing protocols.
- Ability to design and analyze the unicast and multicast routing protocols.

UNIT- I

Introduction: Uses of computer networks- Business application, Home applications, Mobile users Social issues; Networks-Network criteria, Network Models, Categories of Networks; Layered tasks; OSI Reference Model-Layers architecture, Peer-to-peer process; **Layers in OSI model**; TCP/IP protocol Suite; Addressing-Physical, logical, Port and Specific addresses; Transmission media-Guided media, unguided media; switching-Circuit switching, Data gram networks, Virtual circuit networks;.

UNIT- II

Data Link Control: Data Link Layer Design Issues-Services, Framing, Error control, Flow control; Error Detection and Correction--Correcting codes; detecting codes;

Elementary Data Link Protocols-Simplex protocol, Stop-and-wait protocol; Sliding Window Protocols-One bit sliding window protocol, Protocol using Go Back N, Protocol using selective repeat; Examples of Data Link Protocols-HDLC, Data link layer in the internet; **Multiple accesses control:** The Channel Allocation Problem, Multiple Access Protocols, Ethernet, Wireless LANS, and Bluetooth.

UNIT –III

Network Layer: Network Layer Design Issues: Store and forward Packet switching, Services provided to the transport layer, Implementation of Connection Less and Connection Oriented Services. Routing Algorithms: Shortest path, Flooding, Distance Vector, Link State, Hierarchical, Broadcast and multicast routing. Congestion Control Algorithms and Quality of Service.

Internetworking: How networks differ, Concatenated Virtual Circuits, Tunnelling, Routing and Fragmentation. Network Layer in the Internet: IP Protocol, IP address, OSPF, BGP, and Multicasting.

UNIT -IV

Transport Layer: Transport service, elements of transport protocol, simple transport protocol, Internet transport protocols: UDP, TCP, Performance issues.

Application Layer: Domain Name Space (DNS)-DNS name space, Resource Records, Name Servers; Electronic mail-Architecture and services ,User Agent, Message Formats, Message Transfer, Delivery; World Wide Web (www)-Architecture, Static and Dynamic web documents, HTTP; **Network Security**-Cryptography-Introduction, Substitution and Transportation Ciphers.

Text Books:

1. S.Tanenbaum, “Computer Networks”, 4th Edition, (Pearson Education / PHI), 2008.
2. Behrouz A. Forouzan, “Data communication and networking”, 4th Ed, TMH 2006.

Reference Books:

1. William Stallings, “Data and Computer Communications”, Fifth edition, PHI, 1998.
2. Kurose & Ross, “COMPUTER NETWORKS– A Top-down approach featuring the Internet”, Pearson Education, 3rd edition, 2005. Alberto Leon,Garciak.
3. Douglas Comer, “Internetworking with TCP/IP”, Volume 1, 5th edition, Prentice Hall of India, 2005.
4. LeonGartia, IndraWidjaja, “Communication Networks Fundamental Concepts and Key Architectures”, 2nd edition, TMH, 2003.
5. Nader F.Mir, “Computer and Communication Networks”, PHI, 2010.

Web References:

1. http://www.cse.iitk.ac.in/users/dheeraj/cs425/
2. http://authors.phptr.com/tanenbaumcn4/

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(13CS504) DESIGN AND ANALYSIS OF ALGORITHMS

Objectives:

To study paradigms and approaches used to analyze and design algorithms and to appreciate the impact of algorithm design in practice. It also ensures that students can understand how the time complexity of an algorithm is defined, how asymptotic notation is used to provide a rough classification of algorithms, how a number of algorithms for fundamental problems in computer science and engineering work and compare with one another, and how there are still some problems for which it is unknown whether there exist efficient algorithms, and how to design efficient algorithms.

UNIT – I

Introduction, Pseudo Code Conventions; Performance Analysis: space complexity, time complexity, asymptotic notation: big oh notation, omega notation, theta notation, and little oh notation. Disjoint sets: disjoint set operations, union and find algorithms; spanning trees; connected components; bi-connected components.

UNIT – II

Divide and Conquer: general method, binary search, quick sort, merge sort, Stassen's matrix multiplication. Greedy method: general method, job sequencing with deadlines, knapsack problem, minimum cost spanning trees, single source shortest path problem.

UNIT – III

Dynamic Programming: general method, matrix chain multiplication, optimal binary search trees, 0/1 knapsack problem, all pairs shortest path problem, travelling sales person problem, reliability design. Backtracking: general method, n-queen problem, sum of subsets problem, graph colouring, Hamiltonian cycles.

UNIT – IV

Branch and Bound: general method, 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.

Text Books:

1. Ellis Horowitz, "Satraj Sahni and S Rajasekharam", Fundamentals of Computer Algorithms, Galgotia, 2004.
2. Allen Weiss, "Data structures and Algorithm Analysis in C++", 2nd Edn, Pearson Education, 1996.

Reference Books:

1. Parag Himanshu Dave, Himanshu BhalchandraDave, “Design and Analysis algorithms”, Pearson.
2. M.T. Goodrich, Robert Tamassia, “Algorithm design: Foundations, Analysis and Internet examples” Wiley student Edn, John Wiley & sons.
3. T H Cormen, C E Leiserson, and R L Rivest, Introduction to Algorithms, 2nd Edn, Pearson Education
4. R C T Lee, Hang and TT Sai, Introduction to Design and Analysis of Algorithms, A strategic approach, TMH.
5. Aho, Ullman and Hopcroft, “Design and Analysis of Algorithms”, Pearson Education.
6. Richard Johnson Baugh, and Marcus Schaefer, “Algorithms”, Pearson Education.

Web References:

1. www.cse.iitd.ernet.in/~ssen/csl356/root.pdf
2. www.imsc.res.in/~vraman/pub/intro_notes.pdf
3. www.ics.uci.edu/~goodrich/teach/cs161/notes/

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(13CS505) FORMAL LANGUAGES AND AUTOMATA THEORY

Objectives:

- The main objective of the course is to provide an exposition first to the notion of computability and feasibility.
- To consider language recognition problems instead of general computational problems
- It is to acquire the student with an overview of theoretical foundations of computer science from the perspective of formal languages.
- The finite state machine solve problems in computing
- It classifies machines by their power to recognize languages.
- It explains deterministic, nondeterministic and Turing machines.

UNIT–I

Automata: Alphabets, Strings, Language, Problems. Finite Automata: Definition of Deterministic finite automata, How a DFA processes strings, simpler notations for DFA's, extending the transition function to strings, the language of a DFA. Definition of Nondeterministic finite automata, the extended transition function, the language of an NFA, Equivalence of NFA and DFA, A DFA to recognize a set of keywords. FA with □-transitions- uses of epsilon transition, the formal notation for an epsilon NFA, Epsilon closure, Extended transition and languages for epsilon NFA's, Eliminating epsilon transitions.

UNIT-II

Regular Expressions and Languages: Regular expressions-The Operators of regular expressions, Building regular expressions, Precedence of RE operators, Finite automata and regular expressions-From DFA's to regular expressions, Converting DFA's to regular expressions by eliminating states, Converting regular expressions to automata, Algebraic laws for regular expressions, Applications of pumping lemma, Closure properties of regular sets.

Properties of Regular languages: Pumping lemma for regular languages, Applications of pumping lemma, Closure of regular languages under Boolean operations, Converting among representations, Testing emptiness of regular languages, Testing membership in a regular language, Equivalence and minimization of automata, Minimization of DFA's.

UNIT III

Context Free Grammars and Languages: Definition of context-free grammar, Derivation using grammar, Leftmost and rightmost derivations, The language of a grammar, Ambiguous grammar, Chomsky Normal Form, Greibach Normal Form (GNF), The Pumping lemma for context free languages, Properties of CFL.

Pushdown Automata: Definition of pushdown automata, the languages of a PDA, Equivalence of PDA's and CFG's, Deterministic pushdown automata.

UNIT-IV

Turing Machine: Turing Machine definition, Notation for the Turing machine, Transition diagram for Turing machines, Language of a Turing Machine, Multi tape Turing machines, Equivalence of one-Tape and multi tape TM's.

Undecidability: A Language that is not recursively enumerable, The Church-Turing thesis, Chomsky hierarchy of languages, linear bounded automata and context sensitive language, Post's Correspondence problem, Turing reducibility, Classes of P and NP, NP-Complete and NP-Hard Problems.

Text Books:

1 J.E. Hopcroft and J.D. Ullman, "Introduction to Automata Theory Languages and Computation", first edition, Addison-Wesley, 1979.

2. Michael Sipser, "Theory of computation', 1st edition, 2008.

Reference Books:

1. K.L.P. Mishra and N. Chandrashekaran,"Theory of Computer Science-Automata Languages and Computation", 2nd edition, PHI, 2003.
2. John C Martin, "Introduction to Languages and the Theory of Computation", 3rd edition, Tata McGraw Hill, 2003.
3. Daniel I.A. Cohen,"Introduction to Computer Theory", 2nd edition, John Wiley, 2007.
4. Lewis H.P. and Papadimtion C.H.,"Elements of Theory of computation", Pearson /PHI
5. John E.Hopcroft, "Introduction to automata Theory, Languages and Computation" Third Edition, (2011.

Web References:

1. www.cs.stanford.edu/eroberts/courses/sautomata-theory/basics.html
2. www.global.oup.com/academic/formal-languages-and-automata-theory
3. www.nptel.ac.in

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(13CS506) SOFTWARE ENGINEERING

Objectives:

- An understanding of the role of project management including planning, scheduling, risk management, etc.
- An understanding of different software architectural styles.
- An understanding of approaches to verification and validation including static analysis, and reviews.
- An understanding on quality control and how to ensure good quality software.
- An understanding of some ethical and professional issues those are important for software engineers.

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. Process models: The waterfall model, Incremental process models, Evolutionary process models, specialized process models, The Unified process.

UNIT- II

Software Requirements: Functional and non-functional requirements, User requirements, System requirements, the software requirements document.

Requirements Engineering Processes: Requirements elicitation and analysis, Requirements validation, Requirements management. System models: Context Models, Behavioural models, Data models, Object models, structured methods. Design Engineering: Design process and Design quality, Design concepts, the design model, pattern based software design.

UNIT- III

Creating an Architectural Design: Software architecture, Data design, Architectural styles and patterns, Architectural Design, assessing alternative architectural designs.

Modelling Component-Level Design: Designing class-based components, Object constraint language, designing conventional components. User interface design: The Golden rules, User interface analysis and design, Design evaluation. 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.

UNIT- IV

Product Metrics: Software Quality, A Frame work for Product metrics, Metrics for Analysis Model, Metrics for Design Model, Metrics for source code, Metrics for testing, Metrics for maintenance.

Metrics for Process and Projects: Software Measurement, Metrics for software quality. Risk management: Reactive vs. Proactive Risk strategies, software risks, Risk identification, Risk projection, Risk refinement, RMMM, RMMM Plan.

Text Books:

1. **Software Engineering**: A practitioner's Approach, Roger SPressman, Sixth Edition. McGraw-Hill International Edition, 2005
2. Software Engineering, Ian Sommerville, Seventh Edition, Pearson Education, 2004.

Reference Books:

1. K.K. Agarwal & Yogesh Singh, Software Engineering- New Age International Publishers
2. James F. Peters, Witold Pedrycz, John Wiely, Software Engineering, an Engineering approach
3. Shely Cashman Rosenblatt, Systems Analysis and Design- Thomson Publications.
4. Waman S Jawadekar, Software Engineering principles and practice- The McGraw-Hill Companies.

Web References:

1. www.win.tue.nl/~wstomv/edu/zip30/references/
2. En.wikipedia.org/wiki/software-engineering/

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(13CS507) MICROPROCESSORS AND MICROCONTROLLERS LAB

Minimum twelve experiments should be conducted.

1. Introduction to MASM/TASM.
2. Arithmetic operation – Multi byte Addition and Subtraction, Multiplication and Division – Signed and unsigned Arithmetic operation. ASCII – arithmetic operation- Multi byte Addition and Subtraction, Multiplication and Division.
3. Logic operations – Shift and rotate – Converting packed BCD to unpacked BCD, BCD to ASCII conversion.
4. By using string operation and Instruction prefix: Move Block, Reverse string, Sorting, Inserting, Deleting, Length of the string, String comparison.
5. DOS/BIOS programming: Reading keyboard (Buffered with and without echo) – Display characters, Strings.
6. a) Generating the Fibonacci series.
   b) Ascending order of N-8bit numbers.
   c) Descending order of N-8bit numbers.
7. Verification of the given string is whether palindrome or not.
8. Interfacing stepper motor with 8086 microprocessor
   a) Clockwise 5 rotations
   b) Anti clockwise 5 rotations
9. Interfacing DAC with 8086 microprocessor
   a) Generating triangular waveform
   b) Generating sawtooth waveform
   c) Generating square waveform
10. Reading and Writing on a parallel port.
11. Timer in different modes.
12. Serial communication implementation.
13. 8259 – Interrupt Controller: Generate an interrupt using 8259 timer.
14. 8279 – Keyboard Display: Write a small program to display a string of characters.

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(13CS508) COMPUTER NETWORKS LAB

Objectives:

- To understand the functionalities of various layers of OSI model
- Implement the data link layer framing methods such as character stuffing and bit stuffing.
- Implement on a data set of characters the three CRC polynomials – CRC 12, CRC 16 and CRC CCIP.
- Implement Dijkstra's algorithm to compute the Shortest path thru a graph.
- Take an example subnet graph with weights indicating delay between nodes. Now obtain routing table at each node using distance vector routing algorithm.
- Take an example subnet of hosts. Obtain broadcast tree for it.
- Implement Client-Server Communication using TCP.

List of Programs:

1. a) Study of IP Address b) Connect the computers in LAN for any two types of Topologies.
2. Implement the data link layer framing methods such as character stuffing and bit stuffing
3. Implement on a data set of characters the three CRC polynomials – CRC 12, CRC 16 & CCIP
4. Implement Dijkstra's algorithm to compute the shortest path thru a graph
5. Take an example subnet graph with weights indicating delay between nodes. Now obtain routing table art each node using distance-vector routing algorithm.
6. Take an example subnet of hosts. Obtain broadcast tree for it.
7. Take a 64 bit playing text and encrypt the same using DES algorithm.
8. Write a program to break the above DES coding
9. Using RSA algorithm encrypt a text data and decrypt the same.
10. Implementation of Link state routing algorithm
11. Implementation and study of Goback-N and selective repeat protocols

Additional Programs:

1. Implement the Diffie–Hellman Algorithm
2. Implement digital signature algorithm.

Text Books:

1. S.Tanenbaum, "Computer Networks", 4th Edition, (Pearson Education / PHI), 2008.

2. Behrouz A. Forouzan, "Data communication and networking", 4th Ed, TMH 2006.

Reference Books:

1. William Stallings, "Data and Computer Communications", Fifth edition, PHI, 1998.
2. Kurose & Ross, "COMPUTER NETWORKS– A Top-down approach featuring the Internet", Pearson Education, Alberto Leon, Garciak.

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(13HS122) SOFT SKILLS LAB

Objectives: Keeping in mind the previous exposure of the student to English, this lab focuses on improving the student's efficiency in English at all levels. The lab intends to train students to use language effectively, to participate in group discussions, to help them face interviews, and sharpen public speaking skills and enhance the confidence of the student by exposing him/ her to various situations and contexts which he/ she would face in his/ her career.

Activity– 1: Reading Comprehension
Activity– 2: Listening Comprehension
Activity– 3: Technical Report Writing
Activity– 4: Resume Writing
Activity– 5: Group Discussion
Activity– 6: Situation Dialogues
Activity– 7: Interview Skills
Activity– 8: Technical Presentation

Reference Books:

1. Dr.Alex, "Soft Skills" – Know yourself & Know the world.
2. Huckin and Olsen, Technical Writing and professional communication, Tata Mc Graw-Hill 2009.
3. Scott Morgan and Barrett Whitener, Speaking about Science, A Manual for Creating Clear Presentations ,Cambridge University press, 2006
4. Meenakshi Raman & Sangeeta Sharma, Technical Communication, Oxford University Press 2009.
5. M. Ashraf Rizvi, Resume's and Interviews, Tata Mc Graw-Hill, 2008
6. KK Ramachandran and KK Karthick, Form Campus To corporate, Macmillan Publishers, India Ltd, 2010
7. Dr A Ramakrishna Rao, Dr G Natanam & Prof SA Sankaranarayanan, English Language Communication: A Reader cum Lab Manual, Anuradha Publications, Chennai 2008.
8. K R Lakshminarayan and T. Muruguvel , Managing Soft Skills, Sci-Tech Publication, 2010
9. John X Wang, Business Communication, CRC Press, Special Indian Edition, 2008.

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(13CS601) COMPUTER GRAPHICS

Objectives:

- Understanding various communications and their development.
- The main objective of the Computer Graphics and Animation program is to provide students with distinguished education in the field of two- and three-dimensional computer graphics
- To learn the output primitives like line, circle and ellipse using algorithms.
- To introduce the necessary background, and the applications of computer graphics and image processing.

UNIT –I

Introduction: The Advantages of Interactive Graphics, Representative Uses of Computer Graphics, Classification of Applications, Overview of Graphics Systems- Video Display Devices, Raster-Scan Systems, Random Scan Systems, Graphics Monitors and Work Stations, Input Devices, Hard Copy Devices, Graphics Software. Output primitives: Points and Lines , Line Drawing Algorithms – DDA Algorithm, Bresenham's Line Algorithm; Mid-Point Circle Algorithm, Midpoint Ellipse Algorithm; Filled Area Primitives- Scan Line Polygon Fill Algorithm, Boundary Fill Algorithm, Flood Fill Algorithm; Clipping Polygons; Generating Characters ; Antialiasing.

UNIT- II

2-D Geometrical Transforms: Basic Transformations, Matrix Representations and Homogeneous Coordinates, Composite Transformations, Other Transformations, Transformations between coordinate systems.

2-D Viewing: The Viewing Pipeline, Viewing Coordinate Reference Frame, Window to View-Port Coordinate Transformation, 2-D Viewing Functions, Line Clipping- Cohen-Sutherland Line Clipping And Liang-Barsky Line Clipping Algorithms; Sutherland Hodgeman Polygon Clipping.

UNIT- III

3-D Geometric and Modeling Transformations: Translation, Rotation, Scaling, Reflection, Shear Transformations, Composite Transformations. 3-D Viewing: Viewing Pipeline, Viewing Coordinates, View Volume and General Projection Transformations, Clipping; 3-D Object Representations: Polygon Surfaces, Quadric Surfaces, Spline Representations, Hermite Interpolation, Bezier Curves, and B-Spline Curves.

UNIT- IV

Achromatic and Colored Light: Achromatic Light, Chromatic Color, Color Models for Raster Graphics, Reproducing Color, Using Color in Computer Graphics. Computer animation: Design of Animation Sequences, General Computer Animation Functions, Raster Animation, Computer Animation Languages, Key Frame Systems, Motion Specifications.

Text Books:

1. James D.Foley, Andries Van Dam, Steven K.Feiner, Jhon F.Hughes. "Computer Graphics Principles and Practice", Second Edition in C, Addison Wesley, 1995

2. Donald Hearn and M. Pauline Baker, "Computer Graphics C version", Pearson education, 2nd edition, 1997.

Reference Books:

1. Zhigand xiang, Roy Plastock, "Computer Graphics" Second Edition, Schaum's outlines, Tata Mc Graw Hill.
2. Steven Harrington,"Computer Graphics", TMH
3. M.C.Trivedi, "Computer Graphics and Animation", Jaico Publishing House.
4. Donald D. Hearn, M. Pauline Baker and Warren Carithers, "Computer Graphics with OpenGL", Fourth Edition, Pearson Education, 2010.
5. F.S.Hill, S.M.Kelley, "Computer Graphics", PHI.

Web References:

1. http://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-837-computer graphics-fall-2003/
2. www.nptel.ac.in
3. http://www.cs.mtu.edu/~shene/COURSES/cs3621/NOTES/

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(13CS602) OBJECT ORIENTED ANALYSIS AND DESIGN

Objectives: Students undergoing this course are expected to:

- Develop the different UML diagrams for a software system based on the given requirements.
- Apply forward engineering to convert diagram to code and reverse engineering to convert code to diagram.
- Analyze & design a s/w system in object oriented approach, using unified modeling language.
- Select appropriate models for a s/w system depending upon the complexity of the system.

UNIT-I

Introduction to UML: Importance of modeling, principles of modeling, object oriented modeling, A Conceptual model of the UML, Architecture, Software Development Life Cycle.

Basic Structural Modeling: Classes, Relationships, Common Mechanisms and Diagrams.

Advanced Structural Modeling: Advanced classes, advanced relationships, Interfaces, Types and Roles, Packages.

UNIT-II

Class & Object Diagrams: Terms, concepts, Common modeling techniques for class and Object Diagrams.

Basic Behavioral Modeling-I: Interactions, and Interaction diagrams.

UNIT-III

Basic Behavioral Modeling-II: Use cases, Use case Diagrams, Activity Diagrams.

Advanced Behavioral Modeling: Events and signals, State machines, Processes and Threads, Time and Space, state chart diagrams.

UNIT-IV

Architectural Modeling: Component, Deployment, Component diagrams, Deployment diagrams.

Case Study: The Unified Library Application

Text Books:

1. Grady Booch, James Rumbaugh, Ivar Jacobson, “The Unified Modeling Language User Guide”, 2nd edition, Pearson Education, 2009.
2. Hans-Erik Eriksson, Magnus Penker, Brian Lyons, David Fado, WILEY, “UML 2 Toolkit”, -Dreamtech India Pvt.Ltd.

Reference Books:

1. Meilir Page-Jones, Fundamentals of Object Oriented Design in UML, Pearson Education, 2000.
2. Pascal Roques, Modeling Software Systems Using UML2, WILEY Dreamtech India Pvt. Ltd, 2004.
3. Craig Larman, An introduction to Object – Oriented Analysis and Design and Unified Process Appling UML and Patterns, 3 ed, Pearson Education.
4. John W. Satzinger, Robert B Jackson and Stephen D Burd, Object-Oriented Analysis and Design with the Unified Process, Cengage Learning, 2004.
5. R.C.Lee, and W.M.Tepfenhart, UML and C++, PHI, 2001.

Web References:

1. http://www.uml-diagrams.org/uml-object-oriented-concepts.html.
2. http://www.codeproject.com/KB/architecture/OOADTutorial/OOAD.pdf
3. http://ooaduml.com/.

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(13CS603) NETWORK SECURITY AND CRYPTOGRAPHY

Objectives:

- Understand about various Conventional Encryption Principles designed for providing security.
- Learn public key cryptography, key management principles and Learn Pretty Good Privacy (PGP) which is a computer program that provides cryptographic privacy and authentication.
- Learn IP Security fundamentals, architecture and identifying the key features IP security system.
- Describes how to achieve data confidentiality, data integrity, data authentication and authentication for participants during data transit
- Identify and evaluate current and emerging technologies in security and assess heir applicability to address the users' needs and recognize the need for continued learning throughout their career.

UNIT I

Introduction -Attacks, Services and Mechanisms, Security attacks, Security services, A Model for Inter-network security, Session Hijacking and Spoofing, Buffer overflow .Cryptography - Symmetric Cipher Model, Substitution Techniques, Confusion, Diffusion Steganography, Water mark security, Classical Encryption Techniques. Secret Key Cryptography -Simplified DES, Block Cipher principles, Data Encryption standard, Strength of DES, Differential and Linear Cryptanalysis, Block Cipher Design, Principles and Modes of operation, Algorithms: Triples DES, International Data Encryption algorithm, Blowfish, RC5,CAST-128, Characteristics of Advanced Symmetric block ciphers.

UNIT II

Number Theory-Prime and Relatively prime numbers, Modular arithmetic, Fermat's and Euler's Theorems, Testing for primarily, Euclid's Algorithm, the Chinese remainder theorem, Discrete logarithms.

Public Key Cryptography-Principles, RSA Algorithm, Key Management, Diffie-Hellman Key exchange, Elliptic Curve Cryptography. Message Authentication and Hash Functions- Authentication requirements and functions, Message Authentication, Hash functions, Security of Hash functions and MACs. Hash and MAC algorithms-MD file, Message digests Algorithm, Secure Hash Algorithm, RIPEMD-160, HMAC.

UNIT III

Digital Signatures and Authentication Protocols- Digital signatures, Authentication protocols, Digital signature Standards, Digital signature through Elliptic curve cryptosystem.

Authentication Applications -Kerberos, X.509 directory Authentication Service. Electronic Mail Security: Pretty Good Privacy, S/MIME.

UNIT IV

IP Security -Overview, Architecture, Authentication, Encapsulating Security Payload, Combining security Associations, Key Management. Web Security: Web Security requirements, Secure sockets layer and Transport layer security, Secure Electronic Transaction. Intruders, Viruses and Worms-Intruders, Viruses, Worms, Bacterias. Fire Walls: Fire wall Design Principles, Trusted systems.

Text Books:

1. William Stallings, Cryptography and Network Security: Principles and Practice, 5th Edition, William Stallings, Pearson Education, 2011.
2. Behrouz A. Forouzan and Debdeep Mukhopadhay, Cryptography and Network Security, Tata McGraw-Hill, 2010.

Reference Books:

1. Eric Maiwald ,Fundamentals of Network Security (Dreamtech press)
2. William Stallings, Network Security Essentials (Applications and Standards) Pearson Education
3. Whitman, Principles of Information Security, Thomson.
4. Robert Bragg, Mark Rhodes, TMH Buchmann, Network Security: The Complete reference,
5. Introduction to Cryptography, Springer.

Web References:

1. www.cryptography.com
2. www.interhack.net
3. www.nptel.ac.in
4. http://en.wikipedia.org/wiki/Network_security
5. https://isc.sans.edu/presentations/first_things_first.html

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(13CS604) UNIX PROGRAMMING

Objectives:

- History and main features of Unix systems
- Elementary Unix Shell utilities (awk, sed, tr, grep and etc.)
- Basic Unix Shell programming concepts (variables, expressions, control structures)
- Interactions between C and Unix

UNIT- I

Introduction to UNIX: The UNIX architecture, Features of Unix, General purpose utilities, File handling utilities, Security by file permissions, Process utilities, Disk utilities, Networking commands, Filters, Text processing utilities and Backup utilities, grep, sed, awk.

Working with the Bourne again shell(bash): Introduction, shell responsibilities, pipes and input Redirection, output redirection, here documents, running a shell script, the shell as a programming language, shell meta characters, file name substitution, shell variables, command substitution, shell commands, the environment, quoting, test command, control structures, arithmetic in shell, shell script examples, debugging shell scripts.

UNIT-II

Files: File Concept, File System Structure, Inodes, File Attributes, File types, Library functions, the standard I/O and formatted I/O in C, stream errors, kernel support for files, System calls, file descriptors, low level file access – File structure related system calls(File APIs), file and record locking, file and directory management – Directory file APIs, Symbolic links & hard links. Process – Process concept, Kernel support for process, process attributes, process control - process creation, waiting for a process, process termination, zombie process, Process APIs.

UNIT-III

Inter process Communication : Introduction to IPC, Pipes, FIFOs, Signals– Introduction to signals, Signal generation and handling, Kernel support for signals, Signal function, kill, raise, alarm, pause, abort, sleep functions. Introduction to three types of IPC-message queues, semaphores and shared memory. Message Queues- Kernel support for messages. Semaphores-Kernel support for semaphores, Shared memory example.

UNIT-IV

Multithreaded Programming: Differences between threads and processes, Thread structure and uses Threads and Lightweight Processes, POSIX Thread APIs, Creating Threads, Thread Attributes, Thread Synchronization with semaphores and with Mutexes.

Sockets: Introduction to Sockets, Socket Addresses, Socket system calls for connection oriented protocol and connectionless protocol, example-client/server programs (TCP Socket and UDP Socket).

Text Books:

1. Unix System Programming using C++, T.Chan, PHI (UNIT II to UNIT IV),Pretince Hall, 1996.
2. Unix Concepts and Applications, 4th Edition, Sumitabha Das, TMH. (UNIT I to UNIT II), 2006

Reference Books:

1. Beginning Linux Programming, 4th Edition, N.Matthew, R.Stones, Wrox, Wiley India Edition.
2. Linux System Programming, Robert Love, O'Reilly, SPD.
3. Advanced Programming in the UNIX environment, 2nd Edition, W.R.Stevens, Pearson Education.
4. Unix Network Programming, W.R.Stevens, PHI.
5. Unix for programmers and users, 3rd Edition, Graham Glass, King Ables, Pearson Education.

Web References:

1. en.wikipedia.org/wiki/Shell_script
2. steve-parker.org/sh/sh.shtml
3. man7.org/tlpi/

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(13CS605) WEB TECHNOLOGIES

Objectives:

This course demonstrates an in-depth understanding of the tools and Web technologies necessary for Business application design and development. The course covers Client side scripting like HTML5, Server side scripting like servlets, JSP and also web servers and database interfacing.

UNIT-I

HTML5 Introduction, Forms, Graphics, Media, APIs.

UNIT-II

Web Servers and Servlets: The life cycle of a Servlet, Using Tomcat for Servlet Development, A Simple Servlet, Servlet API, The javax.Servlet Package, Reading Servlet Parameters, The javax.servlet.http Package, handling Http request and response, using Cookies, Session Tracking, Security Issues.

UNIT-III

JSP Application Basics: Introducing Java Server Pages, Http and Servelet Basics, JSP Overview, Setting up the JSP Environment.

JSP Application Development: Generating Dynamic Content, Using JavaBeans Components in JSP Pages, Using Custom Tag Libraries and the JSP Standard Tag Library, Processing Input and Output, Error Handling and Debugging, Sharing Data between JSP Pages, Requests and users, Developing Custom Tag Libraries as Tag Files.

UNIT IV

Accessing a Database: Accessing a database from a JSP page, validating Complex input without a bean, using Transactions, Application –Specific Database Actions.

Database Access Strategies: JDBC Basics, Using Connections and Connection pools, making a Connection Pool Available to Application Components, Using a Generic Database Bean, Developing Application-Specific Database Components.

Text Books:

1. Java Server Pages –Hans Bergsten, SPD O'Reilly, 2003.
2. The complete Reference Java 2 Fifth Edition by Patrick Naughton and Herbert Schildt. TMH, 2002.

Reference Books:

1. Java Server Pages, Pekowsky, Pearson.
2. Core Servlets and JavaServer Pages Volume 1: Core Technologies by Marty Hall and Larry Brown Pearson
3. Internet and world wide web – How to program by Dietel and Nieto PHI/Pearson Education Asia.
4. Murach's beginning Java JDK 5, Murach, SPD.

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(13CS606) COMPILER DESIGN

Objectives:

- Understand the theory and practice of compiler implementation.
- Learn finite state machines and lexical scanning.
- Learn context free grammars, compiler parsing techniques, construction of abstract syntax trees, symbol tables, intermediate machine representations and actual code generation.

UNIT-I

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

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

UNIT–II

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

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

UNIT–III

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

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

UNIT–IV

Data Flow Analysis: Flow graph, data flow equation, global optimization, redundant sub expression elimination, Induction variable elements, Live variable analysis, Copy propagation.

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

Text Books:

1. Principles of compiler design -A.V. Aho. J.D.Ullman; Pearson Education, 1977.
2. Modern Compiler Implementation in C- Andrew N. Appel, Cambridge University Press, 2004.

References Books:

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

Web References:

1. www.dreamincode.net
2. www.nptel.ac.in

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(13CS607) CASE TOOLS LAB

Case studies given below should be modeled using Rational Rose tool in different views i.e Use case view, logical view, component view, Deployment view.

Case Study 1: Library Information System

Problem Statement:

A library lends books and magazines to members, who are registered in the system. Also it handles the purchase of new titles for the library. Popular titles are bought in multiple copies. A member can reserve a book or magazine that is not currently available in the library, so that when it is returned by the library that person is notified. The library can easily create, update and delete information about the titles, members, loans and reservations in the systems.

Case Study 2: Design a Student Registration System

Problem Statement:

Each student has access to his or her course and grade information only and must be authenticated prior to viewing or updating the information. A course instructor will use the system to view the list of courses he or she is assigned for a given semester or has taught previously, view the list of students registered for the course(s) he or she is teaching and record final grades for each student in the course(s). TA assignments will also be viewable through this system. Instructors must also be authenticated prior to viewing or updating any information.

Case Study 3: Automated Teller Machine (ATM)

Problem Statement:

Software is designed for supporting a computerized ATM banking network. All the process involved in the bank is computerized these days. All the accounts maintained in the bank and also the transactions effected, including ATM transactions are to be processed by the computers in the bank. An ATM accepts a relevant cash card, interacts with user, communicates with the central system to carry out the transaction, dispenses cash, and prints receipts. The system to be designed and implemented must include appropriate record keeping and security provisions. The system must handle concurrent access to the same account.

Case Study 4: Online Ticket Reservation for Railways

Problem Statement:

Computer play an integral part of the day in today's life. It makes the entire job easier and faster, every job is computerized so as the ticket reservation we can book over the online ticket reservation system. During the booking of the ticket reservation passenger has to select origin, date of journey, destination, class of train etc. The reservation counter keeps track of passenger's information. Thus the system will have all the details about the trains and facilities provided by them. There are various trains with the different level of convenience for the passengers. The whole database will be maintained by database administrator. There are varieties of trains where the passengers can select the train according to the convenience for their destination journey. The journey could be within the state or across the India. Each train has the three types of classes i.e. Sleeper class, First class and the AC compartment. Design the application for the above problem description.

Case Study 5: Online Auction Sales

Problem Statement:

The online auction system is a design about a website where sellers collect and prepare a list of items they want to sell and place it on the website for visualizing. To accomplish this purpose the user has to access the site. Incase it's a new user he has to register. Purchaser's login and select items they want to buy and keep bidding for it. Interacting with the purchasers and sellers through messages does this. There is no need for customer to interact with the sellers because every time the purchasers bid, the details will be updated in the database. The purchaser making the highest bid for an item before the close of the auction is declared as the owner of the item. If the auctioneer or the purchaser doesn't want to bid for the product then there is fixed cutoff price mentioned for every product. He can pay that amount directly and own the product. The purchaser gets a confirmation of his purchase as an acknowledgement from the website. After the transition by going back to the main menu where he can view other items.

Case Study 6: Recruitment Procedure for Software Industry

Problem Statement:

In the software industry the recruitment procedure is the basic thing that goes in the hand with the requirement as specified by the technical management team. HR first gives an advertisement in leading Newspapers, Journals, Weeklies and Websites. The job seekers can apply for it through by Post or by e-mail to the company. The technical skill and the experience of the candidates are reviewed and the short listed candidates are called for the interview. There may be different rounds for interview like the written test, technical interview, HR interview. After the successful completion of all rounds of interview, the selected candidate's names are displayed. Mean while HR gives all the details about the salary, working hours, terms and conditions and the retirement benefit to the candidate.

Case Study 7: A Point of Sale (POS) System

Problem Statement:

A POS System is a computerized application used to record sales and handle payments; it is typically used in a retail store. It includes hardware components such as a computer and bar code scanner, and software to run the system. It interfaces to various service applications, such as a third-party tax calculator and inventory control. These systems must be relatively fault tolerant; that is, even if remote services and temporarily unavailable they must still be of capturing sales and handling at least cash payments. A POS system must support multiple and varied client – side terminals and interfaces such as browser, PDA's, touch – screens

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.

5. Craig Larman, An introduction to Object – Oriented Analysis and Design and Unified Process Applying UML and Patterns, Pearson Education, 2002.

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(13CS608) UNIX AND COMPILER DESIGN LAB

PART-A: UNIX LAB

1. Interacting with VI Editor.
2. Write a program for file related system calls.
3. Write a program for process related system calls
4. Write a program to demonstrate signals handling.
5. Write a program to demonstrate
   a) Message queue
   b) Shared Memory
6. Perform Socket Programming Using
   a) UDP Socket
   b) TCP socket

PART-B: COMPILER DESIGN LAB

1. Practice of Lex/Yacc of compiler writing.
2. Write a program to check whether a given string belongs to a grammar or not.
3. Write a program to generate parse tree.
4. Develop on LL (1) parser (Construct parse table also).
5. Write a program to check whether a grammar is operator precedent
6. Write a program to show all the operations of stack.
7. Given any intermediate code form implement code optimization techniques

Text Books:

1. Introduction to UNIX & SHELL programming, M.G. Venkatesh Murthy, Pearson Education, 2005.
2. Advanced Programming in the Unix environment, 2nd Edition, W.R.Stevens, Pearson Education, 2005.
3. Principles of compiler design -A.V. Aho. J.D.Ullman; Pearson Education, 1977.
4. Modern Compiler Implementation in C- Andrew N. Appel, Cambridge University Press, 2004.

Web References:

1. en.wikipedia.org/wiki/Shell_script
2. steve-parker.org/sh/sh.shtml
3. http://cecs.wright.edu/~tkprasad/courses/cs780/cs780.html
4. http://books.google.co.in/books/about/COMPILER_DESIGN.html?id=AJt4O4AoCtgC

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(13CS609) WEB TECHNOLOGIES LAB

Week-1

Design a web page using basic html tags like list, frame, table, images etc.

Week-2

Prepare a "*registration form* "with the following fields

Name (Text field)

Password (password field)

E-mail id (text field)

Phone number (text field)

Sex (radio button) Date of birth (3 select boxes.

Languages known (check boxes – English, Telugu, Hindi)

Address (text area)

Week-3

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

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

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

E-mail id (Must follow the standard pattern name@domain.com)

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

Week-4

Design a web page using CSS (Cascading Style Sheets) which includes the following:

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

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

3) Control the repetition of the image with the background-repeat property. As background-repeat: repeat Tiles the image until the entire page is filled, just like an ordinary background image in plain HTML.

4) Define styles for links as

A: link

A: visited

A: active

A: hover

5) Work with layers

6) Add a customized cursor: Selector {cursor: value}

Week-5

1) Install and run Hello world Application in APACHE Tomcat Server.

Week-6

Write a Servelet Program to connect to the database and extract the data from the table and display in html tabular model.

Week-7

User Authentication: Assume four users user1, user2, user3 and user4 having the passwords pwd1, pwd2, pwd3 and pwd4 respectively. Write a Servelet for doing the following.

1. Create a Cookie and add these four user id's and passwords to this Cookie.
2. Read the user id and passwords entered in the Login form and authenticate with the values available in the cookies. If he is a valid user you should welcome him by name else you should display "You are not an authenticated user ".

Week-8

Install a database (Mysql or Oracle).

Create a table which should contain at least the following fields: name, password, email-id, phone number (these should hold the data from the registration form).

Week-9

Write a JSP program to connect to that database and extract data from the tables and display them. Experiment with various SQL queries.

Insert the details of the users who register with the web site, whenever a new user clicks the submit button in the registration page.

Week-10

Write a JSP which does the following job: Insert the details of the 3 or 4 users who register with the web site by using registration form. Authenticate the user when he submits the login form using the user name and password from the database.

Week-11

Create tables in the database which contain the details of items of each category. Modify your catalogue page in such a way that you should connect to the database and extract data from the tables and display them in the catalogue page using JDBC

Week-12

HTTP is a stateless protocol. Session is required to maintain the state. The user may add some items to cart from the catalog page. He can check the cart page for the selected items. He may visit the catalogue again and select some more items. Here our interest is the selected items should be added to the old cart rather than a new cart. Multiple users can do the same thing at a time. This can be achieved through the use of sessions. Every user will have his own session which will be created after his successful login to the website. When the user logs out his session should get invalidated. Modify your JSP pages to achieve the above mentioned functionality using sessions.

Web References:

1. www.w3schools.com
2. www.java2s.com

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(13CS610) TECHNICAL SEMINAR-II

Objectives: To get involved with the latest advancements and developments to enhance communication and presentation skills, exchange of ideas, greater connectivity to develop a research bent of mind.

A Technical Seminar shall have two components, one chosen by the student from the course work as an extension and approved by the faculty supervisor. The other component is suggested by the supervisor and can be a reproduction of the concept in any standard research paper or an extension of concept from earlier course work. A hard copy of the information on seminar topic in the form of a report is to be submitted for evaluation along with presentation. The presentation of the seminar topics shall be made before a committee consisting of Head of the department, seminar supervisor and a senior faculty member. Each Technical Seminar shall be evaluated for 100 marks. Technical Seminar component-I for 50 marks and component-II for 50 marks making total 100 marks. (**Distribution of marks for 50:** 10 marks for report, 10 marks for subject content, 20 marks for presentation and 10 marks for queries).

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(13HS119) MANAGEMENT SCIENCE

Objectives: To explain various concepts of management as well as industry practices.

UNIT – I

Introduction to management and organization: Nature of management, functions of management. Taylor's scientific management, Fayol's principles of management, Maslow's theory, Douglas theory X & Theory Y, Hefzberg theory, systems approaches to management, leadership styles, social responsibilities of management, Departmentation & Decentralization, types of organization Structures

UNIT-II

Operations & Materials Management: Plant layout, types of plant layout-Methods of production (Job, batch, & Mass production), work study, statistical quality control, R-chart, C-chart, P-chart & X-chart (simple problems). Inventory control, Economic Order Quantity (EOQ), ABC analysis, supply chain management.

UNIT - III

Marketing Management & Human resource: Fuctions of marketing, marketing mix, marketing strategies, distribution channels. Manpower planning, recruitment, selection, T&D, placement, wage & salary administration, promotion, transfer, performance appraisal, welfare administration.

UNIT – IV

Project management: Network Analysis, PERT,CPM, identifying critical path, project cost analysis, project crashing (simple problems)

Strategic Management: Mission, goals, objectives, policy, programmes, corporate planning process, environmental scanning, SWOT analysis, steps in strategy formulation & implementation.

Text Books:

1. Management Science – A.R.Aryasri, TMH.

Reference Books:

1. Management Science – Siddiqui & Siddqui, TMH
2. Prasad LM, Principles and Practices of Management, Sultan Chand & Sons, New Delhi
3. Marketing Management – Phillip Kotler, 11/e, pearson, 2007
4. Personnel and Human Resource management – P.Subbarao – Himalaya Publication.
5. Production and operation management – Aswathappa.K, Himalaya Publication House, Mumbai.
6. Strategic management, P.Subba Rao, Himalaya Publishers, 2009
7. Management science – V.S.Manjunath, Person.

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(13CS701) CLOUD COMPUTING

Objectives:

- Understand cloud computing basics
- To understand the basic implementation details about cloud services on web
- To understand how cloud computing can be applied to family and corporate.
- Various ways to collaborate cloud services online
- Cloud computing software security fundamentals and its secured architecture

UNIT- I

Introduction to Cloud Computing: The History and Future of Cloud, Cloud Computing Basics, Overview of Cloud Computing- Components, Infrastructure and Services, Usage of Cloud Computing, Benefits and Limitations, Cloud Infrastructure Models, Cloud computing protocols and On-Demand services.

UNIT- II

Cloud Computing Architecture: Requirements, Introduction to Cloud Computing Architecture, various kinds of Cloud Computing Architecture, Grid Computing, Transactional Computing, On Demand Computing, Distributed Computing and Cloud Application Architectures.

UNIT- III

Introduction to Virtualization: History of virtualization, objectives of virtualization, benefits of virtualized technology, the virtual service desk, related forms of computing, virtualization processes.
Virtualization Technologies: VMware, Microsoft Hyper-V, Virtual Iron, Xen, Ubuntu (Server Edition), Software Virtualization, Para Virtualization, OS Virtualization, Oracle Virtualization, Storage Virtualization Technologies, Virtualization and Storage Management.

UNIT- IV

Security & Disaster Recovery: Security issues in Cloud Computing - Data Security, Network Security, and Host Security. Disaster Recovery Planning, Disasters in the Cloud, Disaster Management. Scaling a Cloud Infrastructure- Capacity Planning, Cloud Scale. GRAPH REDUCTION: Introduction, Types of Graphs, Examples, Representation and Application.
Case Studies: Google APP Engine, Yahoo Hadoop, OBIEE and Windows Azure.

Text Books:

1. George Reese, Cloud Application Architectures Building Applications and Infrastructure in the Cloud, O'Reilly Media Released, April 2009.
2. Ivanka Menken and Gerard Blokdijk, Cloud Computing Virtualization Specialist Complete Certification Kit - Study Guide Book, Emereo Pvt Ltd, April 2009.

Reference Books:

1. Rajkumar Buyya, James Broberg and Andrzej Goscinski, Cloud computing principles and Paradigms, John Wiley and sons, 2011.
2. Michael Miller, Cloud Computing, 1 Ed, Dorling Kindersley India, 2009
3. Danielle Ruest, Virtualization: A Beginner's Guide, 1 Ed, MHE, 2009
4. Barrie Sosinsky, Cloud Computing bible, Wiley India Pvt Ltd, 2011.
5. Anthony T.Velte, TobeJ.Velte, Robert Elsenpeter, Cloud Computing: A Practical approach, Publication Person Education, 2009

Web References:

1. www.cloudinfinit.com
2. www.cloudbook.net
3. www.nptel.ac.in

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(13CS702) DATAWAREHOUSING AND DATA MINING

Objectives:

- To understand and implement classical models and algorithms in data warehousing and data mining.
- To analyze the data, identify the problems, and choose the relevant models and algorithms to apply.
- To compare and contrast different conceptions of data mining.
- To characterize the kinds of patterns that can be discovered by association rule mining, classification and clustering.

UNIT- I

Introduction: What is data mining? Data mining on what kind of data?, Data Mining Functionalities, Classification of Data Mining systems, Data Mining Task Primitives, Integration of a Data Mining System with a Database or Data Warehouse System, Major issues in Data Mining; Data Preprocessing: Why Preprocess the Data?, Data Cleaning, Data Integration and Transformation, Data Reduction, Discretization and Concept Hierarchy Generation. Data Warehouse and OLAP Technology: What is a Data Warehouse?, A Multidimensional Data Model, Data Warehouse Architecture, Data Warehouse Implementation, From Data Warehousing to Data Mining; Data Cube Computation and Data Generalization: Efficient Methods for Data Cube Computation.

UNIT –II

Mining Frequent Patterns, Associations and Correlations: Basic Concepts and a road map, Efficient and Scalable Frequent Item set Mining Methods, Mining various kinds of Association Rules, From Association Mining to Correlation Analysis, Constraint-Based Association Mining. Classification and Prediction: Issues Regarding Classification and Prediction, Classification by Decision Tree Induction, Bayesian Classification, Rule-Based Classification, Classification by Back propagation, Associative Classification, Lazy Learners, Other Classification Methods, Prediction, Accuracy and Error measures, Evaluating the accuracy of a Classifier or Predictor.

UNIT –III

Cluster Analysis: What is cluster analysis?, Types of Data in Cluster Analysis, A Categorization of Major Clustering Methods, Partitioning Methods, Hierarchical Methods, Density-Based Methods, Grid-Based Methods, Constraint-Based Cluster Analysis, Outlier Analysis. Mining Streams, Time Series and Sequence Data: Mining Data Streams, Mining Time-Series Data, Mining Sequence Patterns in Transactional Databases, Graph Mining, Social Network Analysis.

UNIT –IV

Mining Object, Spatial, Multimedia, Text and Web Data: Multidimensional Analysis and Descriptive Mining of Complex Data Objects, Spatial Data Mining, Multimedia Data Mining, Text Mining, Mining the World Wide Web. Applications and Trends in Data Mining: Data Mining Applications, Additional themes on data mining.

Text Books:

1. Jiawei Han & Micheline Kamber, Data Mining – Concepts and Techniques-, 2nd Edition, 2006. , Elsevier Publishers
2. Pang-Ning Tan, Michael Steinbach and Vipin Kumar, Introduction to Data Mining –Pearson education, first edition 2005.

Reference Books:

1. Data Mining Techniques– Arun K Pujari, 2nd edition, Universities Press.
2. Data Warehousing in the Real World – Sam Aanhory & Dennis Murray Pearson Edn Asia.
3. Insight into Data Mining, K.P.Soman, S.Diwakar, V.Ajay, PHI, 2008.
4. Data Warehousing Fundamentals – Paulraj Ponnaiah Wiley student Edition

Web References:

1. www.tutorialspoint.com/data_mining/
2. http://www.cs.gsu.edu/~cscyqz/courses/dm/dmlectures.html
3. http://www.edunotes.in/datawarehousing-and-data-mining-notes

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(13CS703) SOFTWARE TESTING

Objectives:

- To know the behavior of the testing techniques to detect the errors in the software.
- To understand standard principles to check the occurrence of defects and its removal.
- To learn the functionality of automated testing tools.
- To understand the models of software reliability.

UNIT- I

Introduction: Purpose of testing, Dichotomies, Model for testing, Consequences of bugs, Taxonomy of bugs. **Flow graphs and Path testing:** Basics concepts of path testing, Predicates, Path predicates and Achievable paths, Path sensitizing, Path instrumentation, Implementation and application of path testing.

UNIT -II

Transaction Flow Testing: Transaction flows, Transaction flow testing techniques.

Dataflow testing: Basics of dataflow testing strategies in dataflow testing, applications, tools, effectiveness.

Domain Testing: Domains and paths, Nice & Ugly domains, Domain testing, Domains and interfaces testing, domains and testability.

UNIT- III

Paths, Path products and Regular expressions: Path products & path expression, Reduction procedure, Applications, Regular expressions & Flow anomaly detection.

Logic Based Testing: Motivational overview, Decision tables, Path expressions again, KV charts, specifications.

UNIT- IV

State, State Graphs and Transition testing: state graphs, Good & Bad state graphs, State testing, Testability tips. **Graph Matrices and Application:** Motivational overview, matrix of a graph, Relations, Power of a matrix, Node reduction algorithm, Building tools.

Text Books:

1. Software Testing techniques, Boris Beizer, Dreamtech, Second Edition, 1990.
2. Software Testing Tools, Dr.K.V.K.K.Prasad, Dreamtech, 2006.

Reference Books:

1. The craft of software testing - Brian Marick, Pearson Education.
2. Software Testing, Third edition, P.C.Jorgensen, Aurbach Publication.
3. Software Testing, N.Chauhan, Oxford University Press.

Web References:

1) http://books.google.co.in/books/about/Software_Testing_Techniques.html?id=Ixf97h356zcC
2) http://www.vietnamesetestingboard.org/zbxe/?document_srl=6551

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(13CS704) ADVANCED COMPUTER ARCHITECTURE
(Elective-I)

Objectives:

The objective of this course is to learn the fundamental aspects of computer architectural design and analysis.

- The course focuses on processor design, pipelining, superscalar, caches (memory hierarchies), virtual memory, storage systems, and simulation techniques. Advanced topics include a survey of parallel architectures and future directions in computer architecture.
- This course covers topics essential to modern superscalar processor design.
- The Tomasulo algorithm for efficient resolution of true data dependencies.

UNIT- I

Parallel Computer Models: The state of computing, Multiprocessors and Multi computers, Multivector and SIMD Computers. Program and Networks Properties: Conditions of Parallelism, Program Partitioning and Scheduling, System Interconnect Architectures.

Principles of Scalable Performance: Performance Metrics and Measures, Parallel Processing Applications. Processors and Memory Hierarchy: Advanced Processor Technology, Superscalar and Vector Processors, Memory Hierarchy Technology.

UNIT -II

Bus, Cache and Shared Memory: Bus Systems, Cache Memory Organizations, Shared-Memory Organizations. Pipelining and Super Scalar Techniques: Linear Pipeline Processors, Nonlinear Pipeline Processors, Instruction Pipeline Design, Arithmetic Pipeline Design.

Multiprocessors and Multicomputer: Multiprocessor System Interconnects, Cache Coherence and Synchronization Mechanisms, Three Generations of Multicomputers, Message-Passing Mechanisms.

UNIT- III

Multivector and SIMD Computers: Vector Processing Principles, Multivector Multiprocessors, Compound Vector Processing, SIMD Computer Organizations, The Connection Machine CM-5.

Scalable, Multithreaded, and Dataflow Architectures: Latency-Hiding Techniques, Principles of Multithreading, Fine-Grain Multicomputers, Scalable and Multithreaded Architectures, Dataflow and Hybrid Architectures.

UNIT- IV

Instruction Level Parallelism: Introduction, Basic Design Issues, Problem Definition, Model of a Typical Processor, Reorder Buffer, Register Renaming, Tomasulo‘s Algorithm, Limitations in Exploiting Instruction Level Parallelism, Thread Level Parallelism.

Trends in Parallel Systems: Brief Overview of Technology, Forms of Parallelism, Case Studies.

Text Books:

- Kai Hwang and Jotwani, Advanced Computer Architecture- by Second Edition, McGraw-Hill Publications, 2011.
- David E. Culler, Jaswinder Pal Singh, Anoop Gupta:, Parallel Computer Architecture, A Hardware / Software Approach –Morgan Kaufman, first edition, 1998.

Reference Books:

- D.Sima, T.Fountain, P.Kacsuk, Advanced Computer Architecture, Pearson Education.
- John L.Hennessy and David A.Patterson, Morgan Kufmann Computer Architecture A quantitative approach Third Edition (An Imprint of Elsevier).
- Hwang and Briggs , Computer Architecture and Parallel Processing.

Web References:

- www.csenote.weebly.com/advanced-computer-architecture.html
- www.eecg.toronto.edu/~moshovos/ACA06/lecturenotes/001-intro.pdf
- www.questionbankcollections.blogspot.in/2010/12/cs2354-advanced-computer-architecture_27.
- www.slideshare.net/champguru/advanced-computer-architecture-and-parallel-processing.
- www.cs.baylor.edu/~maurer/aida/courses/archintro.pdf

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(13EC705) DIGITAL IMAGE PROCESSING
(Elective-I)

Objective: The objectives of this course are for students to learn the fundamental theories and techniques of digital image processing.

UNIT-I

Digital Image Fundamentals: Image Sensing and Acquisition, Image Sampling & quantization, some basic Relationships between pixels. Mathematical tools used in digital image processing – array Vs matrix operations, linear Vs non linear operations, arithmetic operations, set and logical operations, spatial operations, vector and matrix operations, Probabilistic methods.

Image Transforms: 2D-DFT and properties, Walsh Transform, Hadamard Transform, Discrete cosine Transform, Haar-Transform, Slant Transform, KL transform, comparison of different image transforms.

UNIT-II

Image Enhancement in The Spatial Domain: Basic Intensity transformations functions, histogram Processing, fundamentals of Spatial Filtering, Smoothing Spatial filters, Sharpening spatial filters, Combining spatial enhancement methods.

Image Enhancement in Frequency Domain: Basics of filtering in frequency domain, additional characteristics of the frequency domain, correspondence between filtering in the spatial and frequency domains. Image smoothing using frequency domain filters, image sharpening using frequency domain filters – Gaussian High pass filters, Laplacian in the frequency domain, Homomorphic filtering.

UNIT-III

Image Degradation / Restoration: Noise models, Restoration in the presence of Noise only-spatial filtering, - mean, order- statistic and adaptive filters, Estimating the Degradation function, Inverse filtering, Weiner filtering, Constrained Least squares filtering.

Image Segmentation: Point, line and edge Detection, Thresholding, Region based segmentation, the use of motion in segmentation.

UNIT-IV

Image Compression: Need for Image compression, Classification of Redundancy in Images, Image compression models, Classification of image compression schemes, Run length coding, arithmetic coding, Block truncation coding, Dictionary based compression, transform based compression, Image compression standards, Scalar quantization, vector quantization.

Color Image Processing: Color models, pseudo color image processing, color transformations, Smoothing and sharpening, image segmentation based on color.

Text Books:

1. Digital Image Processing-R. C .Gonzalez & R.E. Woods, Addison Wesley/Pearson education, 3rd Edition, 2010.
2. Digital Image processing– S jayaraman, S Esakkirajan, T Veerakumar, Tata McGraw Hill.

Reference Books:

1. Digital Image processing using MATLAB-Rafael C. Gonzalez, Richard E woods and Steven L.Eddins, Tata McGraw Hill, 2010.
2. Fundamentals of Digital Image processing-A .K. Jain, PHI.

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(13CS706) DISTRIBUTED SYSTEMS
(Elective-I)

Objectives:

- To explore distributed systems principles associated with communication, naming, synchronization, distributed file systems, system design, distributed scheduling, and several case studies.
- To cover both foundational concepts and well as practical deployments.

UNIT- I

Characterization of Distributed Systems: Introduction, Examples of Distributed Systems, Resource Sharing and the Web, Challenges.

System Models: Introduction, Architectural Models, Fundamental Models- Interaction Model, Failure Model, Security Model.

UNIT- II

Inter process Communication: Introduction, The API for the Internet Protocols- The Characteristics of Inter process communication, Sockets, UDP Datagram Communication, TCP Stream Communication; Client Server Communication; Distributed Objects and Remote Invocation: Introduction, Communication between Distributed Objects – The Object Model, Distributed Objects, Distributed Object Model, Design Issues for RMI, Implementation of RMI, Distributed Garbage Collection; Remote Procedure Call; Events and Notifications.

UNIT- III

Operating System Support: Introduction, the Operating System Layer, Protection, Processes and Threads–Address Space, Creation of a New Process, Threads. Distributed File Systems: Introduction, File Service Architecture; Peer-to-Peer Systems: Introduction, Napster and its Legacy, Peer-to-Peer Middleware, Routing Overlays.

UNIT- IV

Coordination and Agreement: Introduction, Distributed Mutual Exclusion, Elections, Multicast Communication; Transaction and concurrency control: introduction, transaction, nested transaction, Locks, time stamp ordering; Distributed Transactions: Concurrency Control in Distributed Transactions, Distributed Dead Locks, Transaction Recovery;

Text Books:

1. George Coulouris, Jean Dollimore, Tim Kindberg, “Distributed Systems- Concepts and Design”, Fourth Edition, Pearson Publication, 2005.

Reference Books:

1. MukeshSinghal, “Advanced Concepts in Operating Systems”, Mc GrawHill Series in Computer Science, 1994.
2 A.S.Tanenbaum, M.Van Steen, “Distributed Systems”, Pearson Education, 2004.
3. M.L.Liu, “Distributed Computing Principles and Applications”, Pearson Addison Wesley, 2004.
4. HagitAttiya and Jennifer Welch, “Distributed Computing: Fundamentals, Simulations and Advanced Topics”, Wiley, 2004.
5. George Coulouris, Jean Dollimore, Tim Kindberg, “Distributed Systems Concepts and Design”, Third Edition, Pearson Education Asia, 2002.

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(13CS707) BIG DATA
(Open Elective)

Objectives:

- This course introduces the fundamental concepts of cloud and lays a strong foundation of Apache Hadoop (Big data framework).
- The HDFS file system, MapReduce frameworks are studied in detail.
- Hadoop tools like Hive, and Hbase, which provide interface to relational databases, are also covered as part of this course work.

UNIT -I

The design of HDFS, HDFS concepts, Command line interface to HDFS, Hadoop File systems. Interfaces, Java Interface to Hadoop, Anatomy of a file read, Anatomy of a file writes. Replica placement and Coherency Model. Parallel copying with distcp, keeping an HDFS cluster balanced.

UNIT- II

Introduction, analyzing data with unix tools, Analyzing data with Hadoop. Java MapReduce classes (new API). Data flow, combiner functions, running a distributed MapReduce Job. Configuration API.Setting up the development environment. Managing configuration. Writing a unit test with MR Unit. Running a job in local job runner. Running on a cluster. Launching a job. The MapReduce Web UI.

UNIT-III

Classic MapReduce, Job submission, Job Initialization. Task Assignment, Task execution, Progress and status updates, Job Completion. Shuffle and sort on Map and reducer side. Configuration tuning.

UNIT- IV

MapReduce Types, Input formats, Output formats, Sorting. Map side and Reduce side joins. The Hive Shell, Hive services, Hive clients. The meta store, Comparison with traditional databases. Hive Ql, H basics, Concepts, Implementation, Java and MapReduce clients. Loading data, web queries.

Text Books:

1. Tom White, Hadoop: The Definitive Guide, 3rd Edition, O'Reilly Publications, 2012
2. Landis & Blacharski, Cloud Computing made easy, 1st edition, Virtual Global, Inc, 2013.
3. Unit 2: VMWare: https://ccp.cloudera.com/display/SUPPORT/Downloads

Web References:

1. http://www.cloudera.com/content/cloudera-content/cloudera- docs/HadoopTutorial/ CDH4/ Hadoop-Tutorial.html

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(13CS708) E-COMMERCE
(Open Elective)

Objectives:

- Acquaint with fundamental terms and concepts of e-commerce.
- Compare and contrast the types of business models and e-commerce models
- Analyze important strategic planning factors when implementing e-commerce initiatives.
- Recommend appropriate technical resources for e-commerce projects.
- Evaluate e-commerce projects for financial and technological feasibility.

UNIT-I

Introduction: Electronic Commerce Frame work, anatomy of E-Commerce applications, E-Commerce Consumer applications, E-Commerce organization applications. Consumer oriented electronic commerce: Consumer Oriented Applications, Mercantile Process models from the consumer's Perspective and from the Merchant's Perspective.

UNIT-II

Electronic Payment Systems: Types of Electronic Payment Systems, Digital Token-Based electronic payment systems, Smart Cards and electronic payment systems, Credit Card based electronic payment systems, Risks and Electronic Payment systems.
Inter organizational commerce, EDI Implementation, MIME and Value added networks.

UNIT-III

Intra Organizational Electronic Commerce: Work Flow, Automation and coordination, Customization and internal Commerce, Supply chain Management. Corporate digital library: Making a business case for a document Library, Types of digital documents, issues behind document infrastructure, corporate data Warehouses. Advertising and Marketing on the internet: The new age of Information based marketing, advertising on Internet, charting the on-line marketing process, market research.

UNIT-IV

Consumer Search and Resource Discovery: Information search and retrieval, electronic commerce Catalogues, Information Filtering.
Multimedia and Digital Video: Key multimedia concepts, digital video and electronic commerce, desktop video processing, desktop video conferencing. Broadband telecommunication: Broadband background concepts, frame relay, cell, switched multimegabit data service.

Text Book:

1. Ravi Kalakota, Andrew B. Whinston, Frontiers of Electronic Commerce, Pearson Education, 2009.

Reference Books:

1. Hendry Chan, Raymond Lee, Tharam Dillon, Ellizabeth Chang, E-Commerce fundamentals and applications, John Wiley, 3rd edition, 2007.
2. S.Jaiswal, E-Commerce, Galgotia, revised edition, 2008.
3. E frain Turbon, Jae Lee, David King, H.Michael Chang, E-Commerce.
4. Gary P.Schneider, Thomson, Electronic Commerce, 4th annual edition.

Web References:

1.http://www.ecommercetimes.com/
2.http://www.investopedia.com/terms/e/ecommerce.asp
3. http://mashable.com/category/e-commerce/
4. http://searchcio.techtarget.com/definition/e-commerce

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(13CS709) GREEN COMPUTING
(Open Elective)

Objectives:

- To study about green IT fundamentals and strategies
- To understand green business process management and green enterprise architecture
- To study the structure of green grid framework
- To understand socio-cultural aspects of green IT
- To recognize environmentally responsible business strategies

UNIT- I

Green IT Fundamentals: Business, IT, and the environment. Green computing: Carbon foot print, scoop on power (T2). Green IT strategies: Drivers, Dimensions, and Goals. Environmentally responsible business: Policies, Practices and Metrics(T1).

UNIT -II

Green Assets: Buildings, data centers, networks and devices. Green business process management: Modeling, optimization and collaboration, Green enterprise architecture, Environmental intelligence, Green supply chains. Green information systems: Design and development models (T1).

UNIT- III

Green Compliance: Socio-cultural aspects of green IT – Green enterprise transformation roadmap – Green Compliance: protocols, standards and audits – Emergent carbon issues: technologies and future (T1).

UNIT- IV

Case Studies: The Environmentally Business Strategies (ERBS), Case study scenarios for trial runs – Case studies – Applying green IT strategies and applications to a home, hospital, packaging industry and telecom sector.

Text Books:

1. Bhuvan Unhelkar, “Green IT Strategies and Applications-Using Environmental Intelligence”, CRC Press, June 2011.
2. Woody Leonhard, Katherrine Murray, “Green Home computing for dummies”, August 2009.

Reference Books:

1. Alin Gales, Michael Schaefer, Mike Ebbers, “Green Data Center: steps for the Journey”, Shoff/IBM rebook, 2011.
2. John Lamb, “The Greening of IT”, Pearson Education, 2009.
3. Jason Harris, “Green Computing and Green IT- Best Practices on regulations & industry”, Lulu.com, 2008.
4. Carl speshocky, “Empowering Green Initiatives with IT”, John Wiley & Sons, 2010.
5. Wu Chun Feng (editor), “Green computing: Large Scale energy efficiency”, CRC Press, 2012.

Web References:

1. www.citi.umass.edu/ghpc/GHPCC-green-computing-v3.pdf
2. www.green-compute.com
3. http://www.crcnetbase.com/action/doSearch?AllField=green+IT+strategies+and+applications&filter=book&PubIdSpan=10.1201%2Fb10981&publication=&x=36&y=6

Book Links:

1)http://www.crcnetbase.com/action/doSearch?AllField=green+IT+strategies+and+applications&filter=book&PubIdSpan=10.1201%2Fb10981&publication=&x=36&y=6&startPage=1.
2)http://books.google.co.in/books?id=vwTRBtQv5_MC&pg=PT851&source=gbs_selected_pages&cad=3#v=onepage&q&f=false.
3) http://www.crcpress.com/product/isbn/9781439837801.
4)http://as.wiley.com/WileyCDA/WileyTitle/productCd-0470467452.html.

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(13CS710) CLOUD COMPUTING LAB

Part I:

1. Create Google App Engine Account.
2. Getting familiar with Google App Engine Administration console.
3. Profiling a project.

Part II:

1. Create a new Google App Engine project using Eclipse.
2. Compatibility check Google App Engine demo.
3. Create, Update, Find and Delete a record using JPA for Google App Engine.
4. To Insert a record using JPA for APE.
5. Understanding task queue Java API.
6. Understanding MemCache API.

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(13CS711) DATAWAREHOUSINS AND DATA MINING LAB

I. Data Mining Lab:

1. Clustering

i) Open Weka and Load the dataset editor. Get familiarize with the editor operations.

a) Load the weather. nominal dataset. Use the filter weka. Unsupervised, instance. Remove with Values to remove all instances in which the humidity attribute has the value high. To do this, first make the field next to the Choose button show the text Remove with Values. Then click on it to get the Generic Object Editor window, and figure out how to change the filter settings appropriately.

b) Undo the change to the dataset that you just performed, and verify that the data has reverted to its original state.

ii) Choosing k-means clustering algorithm for clustering use the Cancer data (.arff) perform clustering with a Euclidean distance function and visually inspect the nature of the clusters.

2. Classification

i) Choosing an appropriate filter for classification use the Iris data (.arff) perform classification and visualize the classification tree.

ii) The glass dataset glass.arff from the U.S. Forensic Science Service contains data on six types of glass. Glass is described by its refractive index and the chemical elements that it contains; the aim is to classify different types of glass based on these features. This dataset is taken from the UCI datasets, which have been collected by the University of California at Irvine and are freely available on the Web. They are often used as a benchmark for comparing data mining algorithms. Find the dataset glass.arff and load it into the Explorer interface. For your own information, answer the following exercises. How many attributes are there in the dataset? What are their names? What is the class attribute? Run the classification algorithm IBk (weka.classifiers.lazy.IBk). Use cross-validation to test its performance.

II. Data WareHousing Lab:

1. Introduction to Informatica Power Center 7.1.1 and Introduction to Oracle 9i.

2. Adding a Repository

a) Create a Source Definition using source connection and import the employee data from source table.

b) Organize the columns in the table view to the requirement of Data Analysis.

c) Create a Target Definition using target connection to the target table.

d) Create tables for transformation and generate SQL to perform transformation.

3. Mapping

a) Perform an ETL on Employees database. Select the employee table as the source and the same as the target and assume connectivity and delimiters as pipe without any specific transformations.

b) Perform an ETL on Employees database. Select the employee table as the source and the same as the target and assume connectivity and delimiters as pipe using expression transformation filter transformation, router transformation, aggregator transformation and joiner transformation.

c) Perform and ETL on Employees database connect the source and target and then perform debug on the filter transformation mapping.

4. Lookup

a). Using the above mappings perform connected lookup with lookup transformation using natural keys and populate the other keys with default values.

5. Arrange the employ records based on salary in both Ascending and Descending order using sorter transformation

6. Generate Ranks for the students based on marks obtained using Rank Transformation

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(13CS712) TESTING TOOLS LAB

Objectives:

- Testing is a process of executing a program with the intent of finding an error.
- A good test case is one that has a high probability of finding an as yet undiscovered error.
- A successful test is one that uncovers an as yet undiscovered error.

Lab Syllabus Programs:

1. Design and develop a program in a language of your choice to solve the triangle problem defined as follows: Accept three integers which are supposed to be the three sides of a triangle and determine if the three values represent an equilateral triangle, isosceles triangle, scalene triangle, or they do not form a triangle at all. Derive test cases for your program based on decision-table approach, execute the test cases and discuss the results.

2. Design and develop a program in a language of your choice to solve the triangle problem defined as follows: Accept three integers which are supposed to be the three sides of a triangle and determine if the three values represent an equilateral triangle, isosceles triangle, scalene triangle, or they do not form a triangle at all. Assume that the upper limit for the size of any side is 10. Derive test cases for your program based on boundary-value analysis, execute the test cases and discuss the results.

3. Design and develop a program in a language of your choice to solve the triangle problem defined as follows: Accept three integers which are supposed to be the three sides of a triangle and determine if the three values represent an equilateral triangle, isosceles triangle, scalene triangle, or they do not form a triangle at all. Assume that the upper limit for the size of any side is 10. Derive test cases for your program based on equivalence class partitioning, execute the test cases and discuss the results.

4. Design, develop, code and run the program in any suitable language to solve the commission problem. Analyze it from the perspective of dataflow testing, derive different test cases, execute these test cases and discuss the test results.

5. Design, develop, code and run the program in any suitable language to solve the commission problem. Analyze it from the perspective of boundary value testing, derive different test cases, execute these test cases and discuss the test results.

6. Design, develop, code and run the program in any suitable language to solve the commission problem. Analyze it from the perspective of equivalence class testing, derive different test cases, execute these test cases and discuss the test results.

7. Design, develop, code and run the program in any suitable language to solve the commission problem. Analyze it from the perspective of decision table-based testing, derive different test cases, execute these test cases and discuss the test results.

8. Design, develop, code and run the program in any suitable language to implement the binary search algorithm. Determine the basis paths and using them derive different test cases, execute these test cases and discuss the test results.

9. Design, develop, code and run the program in any suitable language to implement the quick sort algorithm. Determine the basis paths and using them derive different test cases, execute these test cases and discuss the test results.

10. Design, develop, code and run the program in any suitable language to implement an absolute letter grading procedure, making suitable assumptions. Determine the basis paths and using them derive different test cases, execute these test cases and discuss the test results.

11. Design, develop, code and run the program in any suitable language to implement the NextDate function. Analyze it from the perspective of boundary value testing, derive different test cases, execute these test cases and discuss the test results.

12. Design, develop, code and run the program in any suitable language to implement the NextDate function. Analyze it from the perspective of equivalence class value testing, derive different test cases, execute these test cases and discuss the test results.

Web References:

1. www.scribd.com/doc/141843556/Software-Testinglab-Manual-DSCE
2. http://webcache.googleusercontent.com/search?q=cache:bi_vG5uclMEJ:www.share-pdf.com/2f82ff4db7794e80ac0e476018d47911/FINAL%2520ST%2520Manual.pdf+&cd=5&hl=en&ct=clnk&gl=in

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	0	0	2	[2]

(13CS713) PROJECT WORK PHASE-I

The object of Project Work Phase-I is to enable the student to take up investigative study in the broad field of his branch of Engineering, either fully theoretical/practical or involving both theoretical and practical work to be assigned by the department on an individual basis or three/four students in a group under the guidance of a supervisor/ guide. This is expected to provide a good initiation for the student(s) in R&D work.

The assignment normally includes:

- Survey and Study of published literature of on the assigned topic.
- Working out a preliminary approach to the problem relating to the assigned topic.
- Conducting preliminary analysis/ modeling/simulation/experiment/ design/ feasibility.
- Preparing a written report on the study conducted for presentation to the department.
- Final seminar presentation before Project Review Committee.

The supervisor/ guide will evaluate the execution of the project periodically.
Project Work Phase-I is allocated 100 marks with 2 credits. Out of 100, 25 marks are allocated for the supervisor/guide to be awarded based on periodical project reviews and submission of the report on the work done. 25 marks are allocated for the supervisor/guide and head of the department to be awarded based on seminar given by each student on the topic of the project. The other 50 marks shall be awarded on the basis of his presentation on the work done on his project by the Departmental committee comprising of Head of the Department, respective supervisor/ guide and two senior faculty of the department appointed by the Principal.
The candidate is declared to have passed in Project work Phase-I when he gets 40% marks given by the Departmental Committee and 50% marks overall.

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	3	1	0	[3]

(13CS801) SOFTWARE ARCHITECTURE AND DESIGN PATTERNS

Objectives:

- To understand the challenges of advanced software design and the issues associated with large-scale software architectures, frameworks, patterns and components.
- To understanding of the tools and techniques that may be used for the automatic analysis and evaluation of software.
- To understanding the principles behind software patterns and be able to apply a number of the fundamental patterns

UNIT- I

Envisioning Architecture: The Architecture Business Cycle, What is Software Architecture, Architectural patterns, reference models, reference architectures, architectural structures and views.

A-7E Avionics system: A case study in utilizing architectural structures.

Creating an Architecture: Understanding Quality Attributes, Achieving qualities, Architectural patterns and styles.

UNIT- II

Creating an Architecture: Designing the Architecture, Documenting software architectures, Reconstructing Software Architecture. Analyzing Architectures: the ATAM, the CBAM.

UNIT III

Patterns: Describing design patterns, organizing the catalogs, how design patterns solve design problems, How to select a design pattern and how to use a design pattern.

Creational patterns: Abstract factory, builder, factory method, prototype, singleton. Structural patterns: Adapter, bridge, composite, decorator, facade, flyweight, Proxy.

UNIT- IV

Behavioral Patterns: Chain of responsibility, command, Interpreter, Iterator, mediator, memento, observer, state, strategy, template method, visitor.

The World Wide Web: A case study in interoperability. Air Traffic Control: A case study in designing for high availability. Celsius Tech: A case study in product line development.

Text Books:

1. Len Bass, Paul Clements& Rick Kazman, Software Architecture in Practice, second edition, Pearson, 2003.
2. Erich Gamma, Richard Helm, Ralph Johnson, John vilissides, Design Patterns elements of reusable object-oriented software, Pearson, 2012.

Reference Books:

1. Luke Hohmann, Beyond Software architecture, Addison Wesley, 2003.
2. David M. Dikel, David Kane and James R. Wilson, Software architecture, Prentice Hall PTR, 2001.
3. F.Buschmann, Pattern Oriented Software Architecture, John Wiley & Sons.
4. Eric Freeman & Elisabeth Freeman, Head First Design patterns, O'REILLY, 2007.
5. Steven John Metsker & William C. Wake, Design Patterns in Java, Pearson education, 2006
6.Deepak Alur, John Crupi & Dan Malks, J2EE Patterns, Pearson education, 2003.

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	3	1	0	[3]

(13CS802) HUMAN COMPUTER INTERFACE

Objectives:

- Understand the basics of human and computational abilities and limitations.
- Understand basic theories, tools and techniques in HCI.
- Understand the fundamental aspects of designing and evaluating interfaces.
- Practice a variety of simple methods for evaluating the quality of a user interface.
- Apply appropriate HCI techniques to design systems that are usable by people.

UNIT – I

Introduction: Importance of user Interface – Defining the user interface, importance of good design; a brief history of HCI. The graphical user interface: popularity of graphics, the concept of direct manipulation, graphical systems, characteristics of the graphical user interface; The web user interface: The popularity of the web, characteristics of web interface; Principles of user interface: principles for the Xerox STAR, general principles.

UNIT – II

The User Interface Design Process: Obstacles and pitfalls in the development path, Usability, design team. Know your user or client: Understanding how people interact with computers. Important human characteristics in design, human considerations in design, Human interaction speeds. Understand the business function: Business definition and requirements analysis, determining basic business functions, design standards or style guides.

Understand the Principles of Good Screen Design: Human considerations in screen design – Screen meaning and purpose, organizing screen elements, ordering of screen data and content, screen navigation and flow, Visually pleasing composition, amount of information, focus and emphasis, presentation information simply and meaningfully, reading, browsing and searching on the web, statistical graphics ; Technological consideration in interface design.

UNIT – III

Select the Proper Kind of Windows: Window characteristics, components of window, window presentation styles, types of windows, window management, organizing window functions, window operations, web systems.

Selecting the Proper Device-Based Controls: Characteristics of device-based controls, selecting the proper device-based controls.

Write Clear Text and Messages: Words, sentences, messages and text; text for web pages.

Create meaningful graphics, icons and images: Icons, Multimedia. Choose the proper colors: color, Color uses, possible problems with color, choosing colors.

UNIT – IV

Software Tools: Specification methods, interface–Building Tools.

Interaction Devices: Keyboards and keypad, pointing devices, speech and auditory interfaces, displays-small and large, printers.

Text Books:

1. Wilbert O Galitz, The essential guide to user interface design, Wiley DreamTech, Second edition, reprint 2010 (UNITS-I,II,III)
2. Ben Shneidermann, Designing the user interface, Pearson Education Asia, 3rd Edition. (UNIT-4), 1998

References Books:

1. ALAN DIX, JANET FINCAY, GRE GORYD, ABOWD, RUSSELL BEALG, Human–Computer Interaction, Pearson Education, 2003.
2. PRECE, ROGERS, SHARPS, Interaction Design, Wiley Dreamtech, 2002.
3. Soren Lauesen, User Interface Design, Pearson Education, 2004.

Web References:

1. http://www.sigchi.org/chi97/ap/tuts.html
2. http://www.idc.iitb.ac.in/~anirudha/it_604.htm

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	3	0	0	[3]

(13CS803) SOFTWARE PROJECT MANAGEMENT
(Elective-II)

Objectives:

Students undergoing this course are expected to:

- Learn about the art of planning and leading software projects.
- Know about how the projects are planned, monitored and controlled.
- Analyze work estimates needed to achieve each task, for each resource.
- Understand managing resources for software projects

UNIT – I

Conventional software management: The waterfall model, conventional software management performance. Evolution of software economics: Software economics, pragmatic software cost estimation. Improving software economics: Reducing software product size, improving software processes, improving team effectiveness, improving automation, achieving required quality, peer inspections.

UNIT – II

Life Cycle: Engineering and production stages, Inception, Elaboration, Construction, Transition phases. Artifacts of the process: The artifact sets, management artifacts, engineering artifacts, programmatic artifacts. Model based software architectures: A Management perspective and technical perspective. Workflows of the process: Software process workflows, iteration workflows.

UNIT – III

Checkpoints of the Process: Major mile stones, minor milestones, periodic status assessments. Iterative process planning: Work breakdown structures, planning guidelines, the cost and schedule estimating process, Iteration planning process, Pragmatic planning. Project organizations and responsibilities: Line-of-Business organizations, Project organizations, evolution of Organizations. Process automation: Automation building blocks, the project environment.

UNIT – IV

Project Control and Process Instrumentation: The seven core metrics, management indicators, quality indicators, life cycle expectations, pragmatic software metrics, metrics automation. Tailoring the process: Process discriminants. Next generation software economics: Next generation cost models, modern software economics. Modern process transitions: Culture shifts, denouement. Case studies: The COCOMO cost estimation model, Process Improvement and Mapping to the CMM.

Text Book:

1. Walker Royce, Software Project Management, Pearson Education, Eighth impression: 2010.

Reference Books:

1. Bob Hughes and Mike Cotterell, Software Project Management, Tata McGraw-Hill Edition, 2006.
2. Shere K D, Software Engineering and Management, 1998, PHI.
3. S.A.Kelkar, Software Project Management: A Concise Study, PHI.
4. Kaeron Conway, Software Project Management from Concept to Development, Dream Tech.
5. Henrey, Software Project Management, Pearson Education, 2003.

Web References:

1. www.comp.glam.ac.uk/staff/dwfarthi/projman.htm
2. ftp://182.74.57.22/SPM.pdf
3. www.techopedia.com/definition/13132/project-management-software

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	3	0	0	[3]

(13CS804) ADHOC AND WIRELESS SENSOR NETWORKS
(Elective-II)

Objectives:

- To understand the basics of Sensor Networks, its architecture and Protocols.
- To study about the fundamentals and different types of Ad Hoc routing protocols.
- To learn about the QoS aware Ad Hoc routing protocols.
- To study about power and energy management in AD HOC network.
- To understand the nature, applications and security issues of sensor networks.

UNIT- I

AD HOC Wireless Networks: Introduction, Issues in Ad hoc wireless networks- Medium Access Scheme, Routing, Multicasting; Routing Protocols For AD HOC Wireless Networks: Classification of Routing Protocols, Table Driven Routing Protocols, On-Demand Routing Protocols-Dynamic Source Routing Protocol, AD HOC On-Demand Distance-Vector Routing Protocol, Temporally Ordered Routing Algorithm; Hybrid Routing Protocols

UNIT- II

Multicast Routing in AD HOC Wireless Networks: Classification of Multicast Routing Protocols, Tree based Multicasting Routing protocol – Bandwidth Efficient Multicast Routing Protocol, Multicast Routing Protocol Based on Zone Routing, Associativity-Based Ad Hoc Multicast Routing, Weight Based Multicast Protocol, Adaptive Shared-Tree Multicast Routing Protocol; Mesh based Multicasting Routing protocols. Quality of Service In AD HOC Networks: Introduction, Issues and challenges in providing QoS in ad hoc wireless networks, Classification of QoS Solutions, MAC layer solutions, Network layer solutions- QoS Routing Protocols, Ticket based QoS Routing Protocol, Predictive location Based QoS Routing Protocol.

UNIT- III

Transport and Security Protocols for AD HOC Wireless Networks: Issues in Designing a Transport Layer Protocol for Ad Hoc Wireless Networks, Design Goals of a Transport Layer Protocol for Ad Hoc Wireless Networks, Classification of a Transport Layer Solutions, Security in Ad Hoc Wireless Networks, Network Security Attacks and Key Management. Energy Management In AD HOC Wireless Networks: Introduction, Need for Energy Management in Ad Hoc Wireless Networks, Classification Of Energy Management Schemes , Battery Management Schemes, Transmission Power Management Schemes, System Power Management Schemes.

UNIT- IV

Wireless Sensor Networks: Introduction, Sensor Network Architecture, Data Dissemination, Data Gathering, Location Discovery, Quality of Sensor Network.

Text Books:

1. C. Siva Ram Murthy and B.S.Manoj, "Ad hoc Wireless Networks – Architectures and Protocols', Pearson Education, 2004.
2. Erdal Cayirci15, Chunming Rong, "Security in Wireless Ad Hoc and Sensor Networks", John Wiley and Sons, 2009.

Reference Books:

1. Feng Zhao and Leonidas Guibas, "Wireless Sensor Networks", Morgan Kaufman Publishers, 2004.
2. Waltenegus Dargie, Christian Poellabauer, "Fundamentals of Wireless Sensor Networks Theory and Practice", John Wiley and Sons, 2010.
3. Carlos De Morais Cordeiro, Dharma Prakash Agrawal, "Ad Hoc and Sensor Networks: Theory and Applications", World Scientific Publishing, Second Edition, 2011.
4. Holger Karl & Andreas Willig, "Protocols and Architectures for Wireless Sensor Networks", John Wiley, 2005.
5. C.K.Toh, "Adhoc Mobile Wireless Networks", Pearson Education, 2002.

Web References:

1. http://www.ece.ncsu.edu/wireless/Resources/Papers/adhocSurvey.pdf
2. http://dsn.tm.kit.edu/medien/publications-tutorials/AdHoc-RoutingMac-Tutorial-MoMuC-Muenchen.pdf
3. http://www.cs.jhu.edu/~cs647/intro_adhoc.pdf

Book Links:

1.http://books.google.co.in/books?id=_dV8z-CZldgC&pg=PA791&lpg=PA791&dq=1.%09C.+Siva+Ram+Murthy+and+B.S.Manoj,+%E2%80%9CAd+hoc+Wireless+Networks+%E2%80%93+Architectures+and+Protocols%E2%80%99,+Pearson+Education,+2004&source=bl&ots=QSumg29tNH&sig=G7kuoX-NhWYni-xz_TMkdYxXpOA&hl=en&sa=X&ei=p6rYU8PGKcSMuAS5q4LwBQ&ved=0CBsQ6AEwAA#v=onepage&q&f=false

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	3	0	0	[3]

(13CS805) MOBILE COMPUTING
(Elective-II)

Objectives:

- Overview of fundamental challenges in wireless networking and potential techniques
- To understand the fundamentals and various computational processing of mobile networks
- To study the specifications and functionalities of various protocols/standards of mobile networks

UNIT - I

Mobile Computing: Introduction, History, architecture, applications. Telecommunication Systems: (GSM) - Mobile services, System architecture, Radio interface, Protocols, Localization and calling, Handover, Security, and New data services. Medium Access Control: Motivation for a specialized MAC, SDMA, FDMA, TDMA, CDMA.

UNIT- II

Wireless LAN: Infrared vs. Radio transmission, Infrastructure and ad-hoc networks, IEEE 802.11, Bluetooth: User scenarios, Architecture, security, link manager protocol. Mobile Network Layer: Mobile IP -Goals, assumptions, entities and terminology, IP packet delivery, agent discovery, registration, tunneling and encapsulation, optimizations. Dynamic Host Configuration Protocol (DHCP). Mobile Transport Layer: Traditional TCP, Indirect TCP, Snooping TCP, Mobile TCP, Fast retransmit/ fast recovery, Transmission /time-out freezing, Selective retransmission, Transaction oriented TCP.

UNIT-III

Databases: Database Hoarding Techniques, Data caching, Client server computing with adaptation, Transactional models, Query processing, recovery, and Quality of service issues. Data Dissemination: Push-based mechanisms, pull-based mechanisms, hybrid mechanisms, selective tuning and indexing techniques.

UNIT - IV

Mobile ADHOC Networks (MANETS): Properties, Applications, Routing and routing algorithms, Wireless sensor networks. Wireless Application Protocol: Architecture, Wireless datagram protocol, Wireless transport layer security, Wireless transaction protocol, Wireless application environment, Wireless markup language, WML script.

Text Books:

1. Jochen Schiller, Mobile Communications, 2 ed, Low price edition Pearson Education, 2003.
2. Rajkamal, Mobile Computing, 2 ed, Oxford University Press, 2008.

Reference Books:

1. Stojmenovic and Cacute, Handbook of Wireless Networks and Mobile Computing, John Wiley, 2002.
2. Hansmann, Merk, Nicklous, Stober, Principles of Mobile Computing, 2 ed, Springer, 2003.
3. William Stallings, "Wireless Communications and Networks", Pearson Education 2002
4. Crooks, Clayton E.II “mobile device game development “, Charles River media 2005.
5. Bellavistha, P.andA.corradi “the hand book of mobile middle way” auerdach, 2006

Web References:

1. www.mobilecomputing.uk.net

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	3	0	0	[3]

(13CS806) INTELLIGENT AGENTS
(Elective-III)

Objectives:

- What an agent and the students should get a good understanding of intelligent agent properties and how agents are distinct from other software paradigms.
- Have a good overview of important agent subjects.
- Get valuable hands-on experience in developing agent systems. This means that students should be able to apply knowledge obtained during the course to design and implementation of an agent- based system

UNIT-I

Intelligent Agents and Deductive Reasoning Agents: The Vision Thing , Some Views of the Field, Intelligent Agents, Agents and Objects, Agents and Expert Systems, Agents as Intentional Systems, Abstract Architectures for Intelligent Agents , How to Tell an Agent What to Do. Agents as Theorem Provers, Agent-Oriented Programming, Concurrent MetateM.

UNIT-II

Practical reasoning Agents: Practical Reasoning equals Deliberation plus Means-Ends Reasoning, Means--Ends Reasoning , Implementing a Practical Reasoning Agent, The Procedural Reasoning System, Reactive Agents , The Brooks and Subsumption Architecture , The limitations of Reactive agents, Hybrid Agents

UNIT-III

Communication and Working Together: Speech Acts - Austin , Searle, The plan-based theory of speech acts, Speech acts as rational action, Agent Communication Languages-KIF, KQML, The FIPA Agent Communication Language , Ontologies for Agent Communication ,Coordination Languages. Cooperative Distributed Problem Solving, Task Sharing and Result Sharing, Result Sharing, Combining Task and Result Sharing, Handling Inconsistency, Coordination

UNIT-IV

Methodology and Applications: Agent-Oriented Analysis and Design, Agents for Workflow and Business Process Management, Distributed Sensing, Retrieval and Management, Electronic Commerce, Human--Computer Interfaces, Agents for Virtual Environments, Agents for X.

Text Book:

1. Michael Wooldridge, an Introduction to Multi Agent Systems - Second Edition, 2009.

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	3	0	0	[3]

(13CS807) SECURE SOFTWARE ENGINEERING
(Elective-III)

Objectives:

- It is helpful for understanding the latest trends in software.
- It is helpful for understanding the current attacks on software.
- Helpful for providing the ways to securing the software.

UNIT- I

Why Is Security a Software Issue?: Introduction, The problem, Software assurance and software security, Threats to software security, Sources of software insecurity, the benefits of detecting software security defects early, Managing secure software development.

What Makes Software Secure? : Introduction, Defining properties of secure software, How to influence the security properties of software, How to assert and specify desired security properties.

UNIT- II

Requirements Engineering for Secure Software: Introduction, the SQUARE process model, SQUARE sample outputs, Requirements elicitation, Requirements prioritization.

Secure Software Architecture and Design: Introduction, Software security practices for architecture and design: Architectural risk analysis. Software security knowledge for architecture and design: Security principles, Security guidelines, and Attack patterns.

UNIT- III

Considerations for Secure Coding and Testing: Introduction, Code analysis, Coding practices, Software security testing, Security testing considerations throughout the SDLC.

Security and Complexity: System Assembly Challenges: Introduction, Security failures, Functional and attacker perspectives for security analysis, System complexity drivers and security, deep technical problem complexity.

UNIT- IV

Governance, and Managing for More Secure Software: Introduction, Governance and security, Adopting an enterprise software security framework, How much security is enough?, Security and project management, Maturity of practice.

Security metrics: Defining security metrics, Diagnosing problems and measuring technical security.

Text Books:

1. Julia H. Allen, Sean Barnum, Robert J. Ellison, Gary McGraw, Nancy R. Mead, Software Security Engineering: A Guide for Project Managers, Addison-Wesley , 1st edition, 2008.
2. Andrew Jaquith, Security Metrics: Replacing Fear, Uncertainty, and Doubt, Addison-Wesley, 1st edition, 2007.

Reference Books:

1. Haralambos Mouratidis, Paolo Giorgini, Integrating Security and Software Engineering: Advances and Future Vision, IGI Global, 2006.
2. Gary McGraw, Software Security: Building Security In, Addison-Wesley, 2006.
3. M. Howard, D. LeBlanc, Writing Secure Code, Microsoft Press, 2nd Edition, 2003.
4. G. Hoglund, G. McGraw, Exploiting Software: How to break code, Addison Wesley, 2004.

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	3	0	0	[3]

(13CS808) WEB SERVICES
(Elective-III)

Objectives:

This course makes the student to gain complete knowledge in web services. Design Web Services that accommodates specified functional and non-functional requirements and constraints. It gives the knowledge by exposing the underlying application components and making them available to any application, any platform, or any device, and at any location. This promising new technology sets the strategic vision of the next generation of virtual business models and the unlimited potential for organizations doing business collaboration and business process management over the Internet.

UNIT- I

Introduction to Web Services: The definition of web services, basic operational model of web services, tools and technologies enabling web services, benefits and challenges of using web services.

Web Services Architecture: Web services Architecture and its characteristics, core building blocks of web services, standards and technologies available for implementing web services, web services communication, basic steps of implementing web services, developing web services enabled applications.

UNIT- II

Core fundamentals of SOAP: SOAP Message Structure, SOAP Encoding, SOAP message exchange models, SOAP communication and messaging, SOAP security.

Developing Web Services using SOAP: Building SOAP Web Services, developing SOAP Web Services using Java, limitations of SOAP.

UNIT- III

Describing Web Services: WSDL, WSDL in the world of Web Services, Web Services life cycle, anatomy of WSDL definition document, WSDL bindings, WSDL Tools, limitations of WSDL.

Discovering Web Services: Service discovery, role of service discovery in a SOA, service discovery mechanisms

UNIT –IV

Web Services Security: XML security frame work, XML encryption, XML digital signature, XKMS structure, guidelines for signing XML documents.

Text Books:

1.R. Nagappan, R. Skoczylas, R.P. Sriganesh ,Developing Java Web Services,, Wiley India, rp – 2008.
2. S. Chatterjee, J. Webber, Developing Enterprise Web Services, Pearson Education, 2008.

Reference Books:

1. S. Graham and others, Building Web Services with Java, Second Edition, Pearson Education, 2008.
2. D.A. Chappell and T. Jewell, Java Web Services, O'Reilly, SPD.
3. McGovern, et al, Java Web Services Architecture, Morgan Kaufmann Publishers, 2005.
4. F.P.Coyle, XML, Web Services, and the Data Revolution, Pearson Education.
5. Web Services, G. Alonso, F. Casati and others, Springer, 2005.

Web References:

1. www.tutorialspoint.com/webservices
2. www.w3schools.com

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	0	0	0	[3]

(13CS809) COMPREHENSIVE VIVA-VOCE

There shall be a Comprehensive Viva-Voce in IV B.Tech II Semester. The comprehensive Viva-Voce shall be evaluated in the topics covering the core aspects of the concerned discipline in which the candidate is likely to get graduated. The marks can be awarded based on the performance in viva-voce examination conducted by a committee consisting of **i)** Head of the Department **ii)** Two Senior Faculty members of the department **iii)** External Examiner appointed by the Principal. The comprehensive Viva-Voce shall be conducted for 100 marks. Of the 100 marks, 25 marks are allocated to each member of the committee.

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	0	0	0	[3]

(13CS810) PROJECT WORK PHASE-II

The Project work Phase-II will be an extension of Phase-I project work. The object of Project work phase-II is to enable the student to extend further the investigative study taken up as the project in Phase-I under the guidance of the supervisor/ guide from the department.

The assignment normally includes:

- Preparing an action plan for conducting the investigation including the team work.
- In depth study of the topic assigned.
- Review and finalization of the approach to the problem relating to the assigned topic.
- Final development of product/process, testing, results, conclusions and further direction.
- Preparing a paper for conference presentation/ publication in journal if possible.
- Preparing a dissertation in the standard format for being evaluated by the department.
- Final presentation of the work done before the Project Review Committee (PRC).

Internal: Project Work Phase-II is allocated 50 internal marks. Out of 50, 25 marks are allocated for the supervisor/guide and head of the department to be evaluated based on two seminars given by each student on the topic of the project. The other 25 marks shall be evaluated on the basis of his presentation on the work done on his project by the Departmental Committee comprising of Head of the Department, respective supervisor/ guide and two senior faculty of the department appointed by the Principal.

External: The semester end examination for project work done during IV B.Tech I semester and IV B.Tech II semester for 150 marks shall be conducted by a Project Review Committee (PRC). The committee comprises of an External Examiner appointed by the Principal, Head of the Department and Project Guide/Supervisor. The evaluation of project work shall be conducted at the end of the II Semester of IV B.Tech. The above committee evaluates the project work report with weightages of 50% of the marks (50 marks) awarded by external examiner, 20% of marks (20 marks) awarded by HOD & 30% of the marks (30 marks) by Project Guide/Supervisor respectively for a total of 100marks. Of the 50 marks for Presentation & Viva-Voce examination, HOD evaluates for 10 marks and external examiner for 40 marks. The evaluation of 150 marks is distributed as given below:

A candidate shall be declared to have passed in project work phase-II if he secures a minimum of 50% aggregate marks (100 marks) (Internal marks + External project marks), subject to a minimum of 40% marks (60 marks) in the project end examination.