

**FSREENIVASA INSTITUTE OF TECHNOLOGY AND MANAGEMENT STUDIES
(AUTONOMOUS)**

Academic Regulations for B. Tech (Regular)

(Effective for the students admitted into I- year from the Academic Year 2013-14 onwards)

1. Eligibility for admission:

Admissions shall be made strictly on the basis of merit rank obtained by the qualifying candidates in the EAMCET entrance test to be conducted or on the basis of any other order of merit prescribed by the Government of Andhra Pradesh.

2. Award of B. Tech degree

A candidate shall be eligible for the award of B. Tech degree, if he/ she satisfies the minimum academic requirements in every subject including the seminar, comprehensive viva-voce and project work successfully in not less than the prescribed course work duration and not more than double the prescribed course work duration and he/ she has not involved in any sort of indisciplinary activities certified by the Principal.

For regular students:

- a. Pursues a course of study for not less than four academic years and in not more than eight academic years.
- b. Register for 180 credits and secure all the 180 (44+44+44+48) credits in not more than eight academic years from the year of his/her admission.

For Lateral Entry students:

- a. Pursues a course of study for not less than three academic years and in not more than six academic years.
- b. Register for 136 credits and secure all the 136 (44+44+48) credits in not more than six academic years from the year of his/her admission.

Students, who fail to fulfill all the above academic requirements, shall forfeit their seat in B.Tech course and their admission will stand cancelled.

3. Under-Graduate (B.Tech) Courses offered:

S.No.	Branch
1.	Civil Engineering (CE)
2.	Computer Science and Engineering (CSE)
3.	Electrical and Electronics Engineering (EEE)
4.	Electronics and Communication Engineering (ECE)
5.	Mechanical Engineering (ME)
6.	Information Technology (IT)
7.	Electronics and Instrumentation Engineering (EIE)

4. Supplementary examinations:

The student eligible to appear for the external examination in a subject, but was absent for it or failed in it can appear for that subject at the next supplementary examination. However for I-year and IV-II- semester students there will be an advanced supplementary examination.

5. Contact periods/ Credits and marks:

	I -Year		Semester	
	Periods / Week	Credits	Periods / Week	Credits
Theory	03	05	03	03
	02	04	--	--
Practical	03	03	03	02
Drawing	06	05	03	02
			06	04
Reasoning and Aptitude skills(I-year) - Self- study	03	05	--	--
Technical Case study (III-I) - Self-study	--	--	04	03
Soft Skills Lab(III- I/II) – Self-study			03	02
Project Seminar (IV-I)	--	--	02	03
Comprehensive Examination (IV-II)	--	--	--	04
Project Work (IV-II)	--	--	18	10

Table 1: Contact periods/ Credits and marks for I - B.Tech

	Subjects	Periods/ Week	Tutorial class	Credits	Internal marks	External marks	Total marks
Theory	English	02	-	04	30	70	100
	Engineering Physics	02	01	04	30	70	100
	Engineering Chemistry	02	01	04	30	70	100
	C Programming and Data Structures	03	01	05	30	70	100
	Mathematics – I	03	01	05	30	70	100
	Engineering Drawing	03	-	05	30	70	100
Practical	English Language and Communication Skills	03	-	03	40	60	100
	Engineering Physics and Engineering Chemistry	03	-	03	40	60	100
	C Programming and Data Structures	03	-	04	40	60	100
	IT and Engineering Work Shop	03	-	04	40	60	100
Self-study	Reasoning	03	-	03	30	70	100
Total credits		32	04	44			
		36					

Table 2: Contact periods/Credits and marks for II, III, IV- B.Tech

	Semester				
	Periods/ week	Credits	Internal marks	External marks	Total marks
Theory	04	03	30	70	100
Practical	03	02	40	60	100
Technical Case Study	04	03	40	60	100
Soft Skills Lab	03	02	40	60	100
Project Seminar	02	03	100	-	100
Comprehensive Exam	-	04	100	-	100
Project	18	10	40	60	100

6. Self-study courses:

Objectives:

- To promote self-learning, analytical, presentation and discussion skills and to minimise teaching/ textbook/notes related memorization
- To create enthusiasm for learning
- To inculcate the spirit of team work
- To promote ability to work independently and confidently
- The following are the self-study subjects

6.1 Reasoning and Aptitude Skills (I - year)

- Mainly Online practice
- On the basis of intermediate knowledge
- The emphasis is on comprehensive understanding and application of analytical and logical reasoning.

6.2 Advanced Technical Study (II, III, & IV year B. Tech)

The Student will select one advanced topic beyond the text book material for each of the theory courses in the curriculum in that semester and appear for the examination along with the II-internal examination.

6.3 Technical Case Study (III – I- semester)

The student has to select technical project/ technical understanding the design and manufacturing aspects of the entity prepare a report, give a seminar and submit, and appear for a viva-voce examination.

6.4 Soft-skills Laboratory (III - I/II-semester)

Soft-skills laboratory is incorporated to develop the competencies among the young engineering graduates in the area of communication, creative and critical thinking, team work, program and project management, decision making and problem solving skills. The laboratory is mainly focussed on enhancing the employability skills of the students.

7. Audit course:

Professional Ethics (II-I or II/-II-semester)

No credits and No examination but attendance will be reckoned.

8. Attendance:

- A student shall be eligible to appear for external examinations, if he/ she acquires a minimum of 75% of attendance in aggregate of all the subjects in a semester.
- **Shortage of attendance below 65% in aggregate shall in NO case be condoned.**
- Condonation of shortage of attendance in aggregate up to 10% (65% or above but below 75%) in each semester may be granted on valid reasons only.
- Students whose shortage of attendance is not condoned in any semester are not eligible to take their external examination of that class and their registration shall stand cancelled.
- A student will not be promoted to the next semester unless he/ she satisfies the attendance requirements of the present semester and can seek re-admission for that semester when offered next.
- A stipulated condonation fee shall be payable to the college towards the shortage of attendance.

9. Distribution and credence of marks:

Evaluation of student's performance:

The performance of a student in each semester/ I-year shall be evaluated subject-wise for a maximum of 100 marks for theory and 100 marks for practical subject. In addition, a seminar

for 100 marks, project work for 100 marks and comprehensive examination for 100 marks shall be evaluated in IV-year.

Evaluation of internal marks:

- In professional theory subjects, internal evaluation will be for 30 marks (25 marks for the two internal examinations and 5 marks for ‘Advanced Technical Study’).
- The external examination will be conducted for 70 marks.
- During the semester, there shall be **two** internal examinations. Each internal examination question paper consists of 5 short answer questions for 10 marks and 5 descriptive answer questions, out of which the student has to answer 3 questions for 20 marks for a total duration of 2 hours.
- I-internal examination will be conducted in units-1 and 2 of syllabus for 30 marks and evaluated for 10 marks.
- II- internal examination will be conducted in units-3, 4 and 5 of syllabus for 30 marks and evaluated for 15 marks.
- ‘Advanced Technical Study’ (**for II, III and IV- year**) internal examination will be conducted for 5 marks along with II-internal examination, in the topic selected by the student in consultation with the subject staff concerned.
- If there is any fraction in the marks secured by the student in the internal examinations, then it will be rounded off to the next nearest highest mark.
- The cumulative marks secured by the student in both the internal examinations and the ‘Advanced Technical Study’ internal examination for a maximum of 30 will be considered as internal marks.
- However, for the first year, there shall be **three** internal examinations as in the above pattern.

The syllabus will be unit - 1 for I- internal examination, units - 2 and 3 for II- internal examination and units - 4 and 5 for III- internal examination. Each internal examination is conducted for 30 marks and evaluated for 10 marks.

If there is any fraction in the marks secured by the student in the internal examinations, then it will be rounded off to the next nearest highest mark.

The cumulative marks secured by the candidate in all **three** internal examinations for a maximum of 30 marks in each subject shall be considered internal marks.

No ‘Advanced Technical Study’ in I-year.

9.3 Make-up examination:

One make-up internal examination shall be conducted at the end of the semester but before the practical examinations to those students who are absent with prior written permission of the HOD/Principal for either one or both the internal examinations on medical grounds or with genuine valid reasons only.

For II, III and IV- year:

- The examination will be conducted in all the **five** units and “Advanced Technical Study” irrespective of the examination(s)absent. If the candidate is absent for (a) I- internal examination, the make-up examination will be evaluated for a maximum of 10 marks (b) II- internal examination, then the make-up examination will be evaluated for a maximum of 15 marks and (c). both the internal examinations, then the make-up examination will be evaluated for a maximum of 25 marks.

- Make-up examination will be conducted for the absentees in ‘Advanced Technical Study’ for 5 marks.

For I-year:

The examination will be conducted in all the **five** units irrespective of the internal examination(s) absent.

If the candidate is absent for (a) any **one** internal examination, then the make-up examination will be conducted for a maximum of 10 marks (b) any **two** internal examinations, then the make-up examination will be conducted for a maximum of 20 marks and (c). all the **three** internal examinations, then the make-up examination will be conducted for a maximum of 30 marks.

9.4 Evaluation of drawing subjects:

For II, III and IV-year:

- For the semester subjects having Design and/ Drawing, such as Machine Drawing/ Building Drawing/ Irrigation Design and Drawing/ RCC Design/ Drawing and Estimation, the distribution shall be 30 marks for internal evaluation and 70 marks for external examination.
- Day-to- day work assessment in the class will be for 5 marks that shall be evaluated by the teacher concerned for the designs/drawings/reports submitted.
- There shall be two internal examinations in a semester. I- internal examination will be in units - 1 and 2 for 10 marks and II- internal examination will be in units- 3, 4 and 5 for 15 marks.
- The cumulative marks of the two examinations along with the day-to-day assessment marks secured by the candidate for a maximum of 30 will be considered internal marks.
- No advanced technical study for drawing subjects.

For I-year:

- I-internal examination will be conducted in unit - 1 and evaluated for 5 marks. II- internal examination will be conducted in units - 2 and 3 and evaluated for 10 marks. III-internal examination will be conducted in units - 4 and 5 and evaluated for 10 marks.
- Day-to- day work assessment in the class will be for 5 marks that shall be evaluated by the teacher concerned for the drawings submitted.
- The cumulative marks of the three examinations along with the day-to-day assessment marks secured by the candidate for a maximum of 30 will be considered internal marks.
- Engineering drawing will have university external examination.

9.5 Evaluation in practical subjects: (common for all)

For practical subjects, there shall be a continuous evaluation during the semester for 40 internal marks and 60 external examination marks. Day-to-day work in the laboratory shall be evaluated for 40 marks by the laboratory teacher concerned. The external examination shall be conducted for 60 marks by the laboratory teacher and another examiner.

For I-year

- The students shall attend the Physics laboratory and Chemistry laboratory in alternate weeks. The external examination shall be conducted separately and the cumulative marks secured by the student in both the examinations will be considered.

- The students shall attend Engineering workshop and IT workshop as a single laboratory every week and the external examination is conducted as a single laboratory sharing the maximum marks and time for one task each from engineering workshop and IT workshop. The cumulative marks secured by the student shall be considered.

9.6 Evaluation for ‘Technical Case Study’:

- **A three member committee consisting of HOD/ HOD’s nominee and two senior faculty members will evaluate the ‘The Technical Case Study’.**
- Day –to –day internal evaluation will be done for 40 marks by the teacher concerned.
- External evaluation will be done by the above committee for 60 marks based on the seminar to be given by the student and the report submitted.
- For the seminar, the student shall collect the information on a specialized topic of his/ her choice and prepare a technical report, showing his/her understanding over the topic, and submit the same to the department before presentation. The report and the presentation shall be evaluated by the three member committee.

9.7 Comprehensive examination:

The evaluation will be based on the GATE examination pattern for 100 marks at the beginning of IV- II semester.

- 9.8 **Evaluation of Project work Seminar:** Project work seminar shall be conducted at the end of IV-I semester by a three member committee, consisting of HOD/HOD’s nominee, co-ordinator and project supervisor

7.8 Evaluation of Project work:

- Out of a total of 100 marks for the project work, 40 marks shall be for internal evaluation and 60 marks for the external examination (viva-voce).
- The internal evaluation shall be done by the Project Review Committee (PRC), consisting of HOD/HOD’s nominee, co-ordinator and/ project supervisor on the basis of two seminars to be given by each student on the topic of his /her project.
- The viva-voce shall be conducted by a committee consisting of HOD/HOD’s nominee, co-ordinator, project supervisor and an external examiner.
- The evaluation of project work shall be conducted at the end of the IV- II-semester.

9.9 External examination: (for all the years)

The external examination question paper consists of short answer questions (without choice) for 20 marks and 5 descriptive answer questions of equal credence with internal choice for 50 marks for 3 hours duration.

9.10 Self-study courses

- Technical Case Study (for II-I) will be **evaluated** for 100 marks by the above said PRC based on the report submitted by the student to the committee.
- The Reasoning and Aptitude (I-year) will be evaluated for 100 marks similar to the theory examination. The internal evaluation will be for a maximum of 30 marks. Three internal examinations shall be conducted for 30 marks (30 - objective type questions, 45- minutes’ duration) and each internal examination will be evaluated for 10 marks.

The external examination shall be conducted for 70 marks for 2 hours duration.

- For **Soft-skills** laboratory (**III- I/ II**), there shall be a continuous evaluation of day-to-day work during the semester for 40 internal marks by the laboratory teacher concerned.
- The external examination shall be for 60 marks, out of which 40 marks will be for written examination and 20 marks for viva-voce.

10. Minimum academic requirements:

Academic requirements to be satisfied besides the attendance mentioned in section-5.

- A student shall be deemed to have satisfied the minimum academic requirements and earned the credits allotted to each theory, practical, design, drawing subject/ seminar/ comprehensive examination or project if he/ she secures a minimum of 40% of marks in the external examination (28 marks) and a total of 50% marks in the internal and external examinations put together for that particular subject.
- Criteria for promotion to next academic year:
 - A student should get 50% of total credits in every academic year for promotion to the next academic year (Regular for 4 years or lateral entry for 3 years) i.e.
 - A student shall be promoted from I-year to II-year only if he/ she fulfils the academic requirement of securing **22** credits.
 - b). A student shall be promoted from II-year to III-year only if he/ she fulfils the academic requirement of securing **44** credits. For Lateral entry students to promote from II to III, he/ she should get 22 credits.
 - c). A student shall be promoted from III-year to IV-year only if he/ she fulfils the academic requirements of securing **66** credits. For lateral entry students to promote from III-year to IV-year, he/ she should get 44 credits.
 - d). Students of regular and lateral entry, who fail to satisfy minimum academic requirements given in clause-7 within eight academic years from the year of their admission shall forfeit their seat in B.Tech course and their admission, shall stand cancelled.

11. Re-admission:

When a student is detained due to lack of credits/ shortage of attendance he/ she has to get re-admitted for that semester/ year after fulfilment of academic regulations, whereas he/ she continues to be in the academic regulations in which he/ she is admitted.

12. Class committee:

- Every class shall have a class committee consisting of teachers of the class concerned, student representatives and a Chairperson who does not teach that class. The overall goal of the class committee is to improve the teaching-learning process.
The functions of the class committee are to:
 - Solve the problems experienced by students in the class room/the laboratories.
 - Clarify the regulations of the degree programme and the details of rules therein.
 - Inform the student representatives about the academic schedule, course structure including the dates of assessments and the syllabus coverage for each assessment.
 - Enlighten the student representatives about the regulations regarding credence used for each assessment. In case of practical courses (laboratory/ project work/ seminar etc.) the breakup of marks for each experiment/ exercise/ module of work/ assignments and evaluation pattern should be clearly discussed in the class committee meeting and informed to the students.
 - Analyze the performance of the students of the class after each test and final examinations, finding the ways and means for solving problems, if any (in the class

committee held after the external examinations, the student representatives should not be present).

- Identify the weak students, if any, and request the teachers concerned to provide some additional help/ guidance/ coaching to them.
- The class committee should be constituted by the HOD one week in advance before the commencement of class work for the semester.
- The Chairperson may invite the faculty members and the HOD to the meeting of the class committee along with the students' representatives.
- The Principal may participate in any class committee of the institution.
- The Chairperson is required to prepare the minutes of every meeting and submit the same to the Principal within two days after the meeting is over and arrange to circulate it among the students and teachers concerned. If there are certain vital points in the minutes that require immediate action to be taken by the management, the same shall be brought to the notice of the Management by the Head of the Institution.
- The first meeting of the class committee shall be held within one week from the date of commencement of the semester. Subsequently, two or three such meetings may be held in a semester at suitable and convenient dates.
- The class committee Chairperson shall display the cumulative attendance particulars of each student on the notice board at the end of every such meeting to enable the students to know their attendance details.
- During these meetings, the student members representing the entire class, shall significantly interact and express the opinions and suggestions of the other students of the class in order to improve the effectiveness of the teaching-learning process.

13. Transitory regulations:

Candidates who have been detained due to lack of attendance or have not fulfilled academic requirements or failed after having undergone the course in the earlier regulations or discontinued and wish to continue the course are eligible for admission into the unfinished semester from the date of commencement of class work with the same or equivalent subjects as and when subjects are offered, subject to section-2 and they continue to be in the same academic regulations in which they are admitted.

14. Withhold of results:

If the candidate has not paid the dues to the college or if any case of indiscipline/ malpractice is pending against him/her, the result of such candidate shall be withheld and he/she will not be allowed/ promoted into the next higher semester. The issue of degree is liable to be withheld in such cases.

15. Award of letter grades:

- All assessments of a course will be done on absolute marks basis. However, for the purpose of reporting the performance of a candidate, letter grades, each carrying certain number of points, will be awarded as per the range of total marks (out of 100) secured by the candidate in each subject as detailed below:

Letter grade	Grade points	Marks range
S	10	90 – 99
A	9	80 – 89
B	8	70 – 79
C	7	60 – 69
D	6	50 – 59
F	0	< 50 (Fail)
ABS	0	-----

• **Grade sheet:**

After the results are declared, grade sheets will be issued to the student with the following details:

- The college in which the candidate has studied
- The list of courses enrolled during the semester and the grade scored
- The Grade Point Average (GPA) for the semester and
- The Cumulative Grade Point Average (CGPA) of all courses enrolled from first semester/ I-year onwards

GPA for a semester is the ratio of the sum of the products of the number of credits for courses acquired and the corresponding points to the sum of the number of credits for the courses acquired in the semester.

$$\text{GPA} = \frac{\text{Sum of [Credits acquired x Grade points]}}{\text{Sum of Credits acquired}}$$

CGPA will be calculated in a similar manner, considering all the courses registered from I-semester. “F” & “ABS”, grades will be excluded for calculating GPA and CGPA.

$$\text{CGPA} = \frac{\sum_{i=1}^n C_i GP_i}{\sum_{i=1}^n C_i}$$

where C_i – is the credits assigned to the course

GP_i – is the point corresponding to the grade obtained for each course

n – is the number of all courses successfully cleared during the particular semester in the case of GPA and during all the semesters in the case of CGPA.

- Whenever students, having arrear subjects, appear for the external semester examination during which there are no regular batch of students writing the same subjects, then, the letter grades for the arrears' subjects shall be awarded based on the range of marks approved by the class committee immediately preceding end semester examination in which regular students wrote.

- **Classification of successful candidates**

Classification of performance of the students at the end of the course (after completing all the course requirements) will be based on CGPA (Cumulative Grade Point Average) as indicated below.

Classification	CGPA
First class with distinction	8.0 and above
First Class	6.5 to 7.99
Second Class	5.0 to 6.49

- A minimum of 5.0 CGPA is required for the award of the degree.

16. Revaluation and Improvement:

- A candidate can apply for revaluation of his/ her external examination answer paper in a theory course, within two days from the date of declaration of results, on payment of a prescribed fee through proper application to the Controller of Examinations through the Head of the Institution. A candidate can apply for revaluation of answer scripts in not more than 5 subjects at a time. The Controller of Examination will arrange for the revaluation and the results will be intimated to the candidate concerned through the Principal.
- No revaluation for seminar, comprehensive viva-voce, practical and project work.
- A candidate can be allowed to apply for improvement only in theory subjects in the next supplementary examinations of that semester (not more than one chance per subject).

17. Number of instruction days:

The minimum no. of instruction days including examinations will be 90 per semester and 180 per year.

18. Rules of discipline:

- Any attempt by any student to influence the teachers, examiners, faculty and staff of controller of examination for undue favors in the exams, and bribing them for marks/ attendance will be treated as malpractice cases and the student will be debarred from the college.
- When the student absents himself/ herself, he/she is treated as to have appeared and obtained ZERO marks in that subject(s) and grading is done accordingly.
- When the performance of the student in any subject(s) is cancelled as a punishment for indiscipline, he/she will be awarded zero marks in that subject(s).
- When the student's answer book is confiscated for any kind of attempted or suspected malpractice the decision of the examiner is final.

19. General:

- a. The academic regulations should be read as a whole for purpose of any interpretation.
- b. Malpractices rules- nature and punishments is appended.
- c. In case of any doubt or ambiguity in the interpretation of the above rules, the decision of the Vice-Chairman of the academic council will be final.
- d. The college may, from time to time, revise, amend or change the regulations, scheme of examinations and syllabi.

20. Disciplinary actions for malpractices / improper conduct in examinations

	Nature of Malpractices/ Improper conduct	Punishment
	<i>If the candidate</i>	
1. (a)	possesses or keeps access 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/ practical) in which he/she 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 inside 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/she will be handed over to the police and a case is registered against him/her.
2.	has copied in the examination hall from any paper, book, programmable calculators, palm computers or any other form of material relevant to the subject of the examination (theory or practical) in which the candidate is appearing.	Expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted to appear for the remaining examinations of the subjects of that Semester/year. The Hall Ticket of the candidate will be cancelled and retained by the CE.
3.	Impersonates any other candidate in connection with the examination.	The candidate who has impersonated shall be expelled from examination hall and forfeits the seat. The performance of the original candidate, who has been impersonated, shall be cancelled in all the subjects of the examination (including practicals and project work) already appeared and shall not be allowed to appear for examinations of the remaining subjects of that semester/year. The candidate is also debarred for two consecutive semesters from class work and all university examinations. The continuation of the course by the candidate is

		subject to the academic regulations in connection with forfeiture of seat. If the imposter is an outsider, he/she will be handed over to the police and a case is registered against him/her.
4.	Smuggles in the answer book or additional sheet or takes out or arranges to send out the question paper or answer book or additional sheet, during or after the examination.	Expulsion from the examination hall and cancellation of performance in that subject and all the other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester/year. The candidate is also debarred for two consecutive semesters from class work and all university examinations. The continuation of the course by the candidate is subject to the academic regulations in connection with forfeiture of seat.
5.	Uses objectionable, abusive or offensive language in the answer paper or in letters to the examiners or writes to the examiner requesting him to award pass marks.	Cancellation of the performance in that subject.
6.	refuses to obey the orders of the Chief Superintendent/Assistant-Superintendent / any officer on duty or misbehaves or creates disturbance of any kind in and around the examination hall or organizes a walk out or instigates others to walk out, or threatens the officer-in charge or any person on duty in or outside the examination hall or causes any injury to his person or to any of his relatives whether by offensive words spoken or written or by signs or by visible representation or assaults the officer-in-charge, or any person on duty inside or outside the examination hall or any of his relatives, or indulges in any other act of misconduct or mischief which results in damage to or destruction of property in the examination hall or any part of the college campus or engages in any other act which in the opinion of the officer on duty amounts to use of unfair means or misconduct or has the tendency to disrupt the orderly conduct of the examination.	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 are also debarred and forfeit their seats. In case of outsiders, they will be handed over to the police and a police case is registered against them.

7.	Leaves the exam hall taking away answer script or intentionally tears off the script or any part thereof inside or outside the examination hall.	Expulsion from the examination hall and cancellation of performance in that subject and all the other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester/year. The candidate is also debarred for two consecutive semesters from class work and all the external examinations. The continuation of the course by the candidate is subject to the academic regulations in connection with forfeiture of seat.
8.	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 is also debarred and forfeits the seat.
9.	Belongs to college, who is not a candidate for the particular examination or any person not connected with the college but indulges in any malpractice or improper conduct mentioned in clause 6 to 8.	<p>Student of the college will be expelled 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.</p> <p>Person(s) who do not belong to the college will be handed over to police and, a police case will be registered against them.</p>
10.	Comes in a drunken state 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.
11.	Copying is detected on the basis of internal	Cancellation of the performance in that

	evidence, such as, during valuation or during special scrutiny.	subject and all other subjects the candidate has appeared including practical examinations and project work of that semester/year examinations.
12.	If any malpractice is detected which is not covered in the above clauses (1) to (11) shall be reported to the Principal for further action to award suitable punishment.	

Malpractices identified by squad or special invigilators

- Punishments to the candidates as per the above guidelines.
- Punishment for institutions : (if the squad reports that the college is also involved in encouraging malpractices)
 - a. A show cause notice shall be issued to the college.
 - b. Impose a suitable fine on the college.
- Shifting the examination centre from the college to another college for a specific period of not less than one year.

Note: All the above regulations will be also applicable for the other B.Tech courses that may be sanctioned to the institution in future.

SREENIVASA INSTITUTE of TECHNOLOGY and MANAGEMENT STUDIES
(Autonomous)

Course structure for B. Tech (Regular) I- year (2013-14)
(Common for all branches)

S. No.	Course Code	Subject	Scheme of Instruction Periods per week					Scheme of Examination Maximum Marks			
			L	D	T	P	C	I	E	Total	
1.	13HAS101	English	2	-	-	-	4	30	70	100	
2.	13HAS102	Engineering Physics	2	-	1	-	4	30	70	100	
3.	13HAS103	Engineering Chemistry	2	-	1	-	4	30	70	100	
4.	13HAS104	Mathematics-I	3	-	1	-	5	30	70	100	
5.	13HAS105	Reasoning and Aptitude	3	-	-	-	3	30	70	100	
6.	13CSE101	C Programming and Data Structures	3	-	1	-	5	30	70	100	
7.	13MEC101	Engineering Drawing	-	5	-	-	5	30	70	100	
8.	13HAS106	Engineering Physics Lab and Engineering Chemistry Lab	-	-	-	3	3	40	60	100	
9.	13HAS107	English Language and Communication Skills Lab	-	-	-	3	3	40	60	100	
10.	13CSE102	C Programming and Data Structures Lab	-	-	-	3	4	40	60	100	
11.	13MEC102	Engineering and I.T. Workshop	-	-	-	3	4	40	60	100	
Contact periods per week			15	5	4	12					
Total periods per week			36								
Total (7 Theory + 4 Labs)							44	370	730	1100	

Lecture – L
 Drawing – D
 Tutorial – T
 Practical – P
 Credits – C
 Internal Marks – I
 External Marks – E

SREENIVASA INSTITUTE OF TECHNOLOGY AND MANAGEMENT STUDIES**(Autonomous)****COMPUTER SCIENCE AND ENGINEERING****COURSE STRUCTURE****II B. Tech I Semester**

S. No.	Course Code	Subject	Scheme of Instruction Periods per week			Scheme of Examination Maximum Marks		
			L	P	C	I	E	Total
1.	13HAS 211	Mathematics II	4	-	3	30	70	100
2.	13MBA 214	Business Management	4	-	3	30	70	100
3.	13ECE211	Electronic Devices and Circuits	4	-	3	30	70	100
4.	13HAS 212	Mathematical Foundations of Computer Science	4	-	3	30	70	100
5.	13EEE 213	Basic Electrical Engineering	4	-	3	30	70	100
6.	13CSE 211	Advanced Data Structures through C++	4	-	3	30	70	100
7.	13CSE 212	Data Structures Lab	-	3	2	40	60	100
8.	13EEC217	Electrical and Electronics Lab	-	3	2	40	60	100
Contact periods per week			24	6				
Total periods per week			30					
Total (6 Theory + 2 Labs)					22	260	540	800

SREENIVASA INSTITUTE OF TECHNOLOGY AND MANAGEMENT STUDIES**(Autonomous)****COMPUTER SCIENCE AND ENGINEERING****COURSE STRUCTURE****II B. Tech II Semester**

S. No.	Course Code	Subject	Scheme of Instruction Periods per week			Scheme of Examination Maximum Marks		
			L	P	C	I	E	Total
1.	13HAS 213	Environmental Science	4	-	3	30	70	100
2.	13HAS 221	Probability and Statistics	4	-	3	30	70	100
3.	13CSE 221	Digital Logic Design and Computer Organization	4	-	3	30	70	100
4.	13CSE 222	Object Oriented Programming through JAVA	4	-	3	30	70	100
5.	13CSE 223	Database Management Systems	4	-	3	30	70	100
6.	13CSE 224	Design and Analysis of Algorithms	4	-	3	30	70	100
7.	13CSE 225	Object Oriented Programming Lab	-	3	2	40	60	100
8.	13CSE 226	Database Management System Lab	-	3	2	40	60	100
9.	13AUD 211	Professional Ethics	2	-	-	-	-	-
Contact periods per week			26	6				
Total periods per week			32					
Total (6 Theory + 2 Labs + 1 Audit Course)					22	260	540	800

SREENIVASA INSTITUTE OF TECHNOLOGY AND MANAGEMENT STUDIES**(Autonomous)****COMPUTER SCIENCE AND ENGINEERING****COURSE STRUCTURE****III B. Tech I Semester**

S. No.	Course Code	Subject	Scheme of Instruction Periods per week			Scheme of Examination Maximum Marks		
			L	P	C	I	E	Total
1.	13CSE 311	Computer Networks	4	-	3	30	70	100
2.	13CSE 312	Operating Systems	4	-	3	30	70	100
3.	13CSE 313	Software Engineering	4	-	3	30	70	100
4.	13CSE 314	Principles of Programming Languages	4	-	3	30	70	100
5.	13CSE 315	Technical Case study	4	-	3	30	70	100
6.	13ECE 323	Microprocessor and Interfacing	4	-	3	30	70	100
7.	13CSE 315	Computer Networks and Operating Systems Lab	-	3	2	40	60	100
8.	13MBA 318	Soft Skills Lab	-	3	2	40	60	100
Contact periods per week			24	6				
Total periods per week			30					
Total (6 Theory + 2 Labs)					22	260	540	800

SREENIVASA INSTITUTE OF TECHNOLOGY AND MANAGEMENT STUDIES**(Autonomous)****COMPUTER SCIENCE AND ENGINEERING****COURSE STRUCTURE****III B. Tech II Semester**

S. No.	Course Code	Subject	Scheme of Instruction Periods per week			Scheme of Examination Maximum Marks		
			L	P	C	I	E	Total
1.	13CSE 321	Theory of Computation	4	-	3	30	70	100
2.	13CSE 322	Object Oriented Analysis and Design	4	-	3	30	70	100
3.	13CSE 323	Unix and Shell Programming	4	-	3	30	70	100
4.	13CSE 324	Computer Graphics	4	-	3	30	70	100
5.	13CSE 325	Software Testing Methodologies	4	-	3	30	70	100
6.	13CSE 326	Artificial Intelligence	4	-	3	30	70	100
7.	13CSE 327	Unix Programming and Case Tools lab	-	3	2	40	60	100
8.	13CSE 328	Computer Graphics and Software Testing Lab	-	3	2	40	60	100
Contact periods per week			24	6				
Total periods per week			30					
Total (6 Theory + 2 Labs)					22	260	540	800

SREENIVASA INSTITUTE OF TECHNOLOGY AND MANAGEMENT STUDIES

(Autonomous)

COMPUTER SCIENCE AND ENGINEERING

COURSE STRUCTURE

IV B. Tech I Semester

S. No.	Course Code	Subject	Scheme of Instruction Periods per week			Scheme of Examination Maximum Marks		
			L	P	C	I	E	Total
1.	13CSE 411	Compiler Design	4	-	3	30	70	100
2.	13CSE 412	Web Technologies	4	-	3	30	70	100
3.	13CSE 413	Data Warehousing and Data Mining	4	-	3	30	70	100
4.	13CSE 414	Cryptography and Network Security	4	-	3	30	70	100
5.	13CSE 415A 13CSE 415B 13CSE 415C	Elective 1 Cloud Computing Soft Computing Advanced Computer architecture	4	-	3	30	70	100
6.	13CSE 416A 13CSE 416B 13CSE 416C	Elective 2 Grid and Cluster Computing Software Project Management Distributed Systems	4	-	3	30	70	100
7.	13CSE 417	Web Technologies Lab	-	3	2	40	60	100
8.	13CSE 418	Data mining and Network security Lab	-	3	2	40	60	100
9.	13CSE 419	Project Seminar	2	-	3	100	-	100
Contact periods per week			24	6				
Total periods per week			32					
Total (6 Theory + 2 Labs + 1 Project Seminar)					25	360	540	900

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COMPUTER SCIENCE AND ENGINEERING

COURSE STRUCTURE

IV B. Tech II Semester

S. No.	Course Code	Subject	Scheme of Instruction Periods per week			Scheme of Examination Maximum Marks		
			L	P	C	I	E	Total
1.	13CSE 421	Internetworking with TCP/IP	4	-	3	30	70	100
2.	13CSE 422A 13CSE 422B 13CSE 422C	Elective 3 Human Computer Interface Distributed Databases Simulation and Modeling	4	-	3	30	70	100
3.	13CSE 423A 13CSE 423B 13CSE 423C	Elective 4 Design Patterns Service Oriented Architecture Network Management System	4	-	3	30	70	100
4.	13CSE 424	Project Work	18	-	10	40	60	100
5.	13CSE 425	Comprehensive Examination	-	-	4	100	-	100
Contact periods per week			30	-				
Total periods per week			30					
Total (6 Theory + 2 Labs + 1 Project Seminar)					23	230	270	500

SREENIVASA INSTITUTE of TECHNOLOGY and MANAGEMENT STUDIES

(Autonomous)

I B.Tech	L	T	P	C
	2	0	0	4
13HAS101	ENGLISH (Common to all Branches)			

UNIT - 1:

Heaven's Gate by Pico Iyer from Enjoying Everyday English - Mokshagundam Visvesvaraya from Inspiring Lives - Exercises – Questions.

Writing: Paragraph writing - Descriptions - Objects - Mechanisms and processes - Listening - Listening for sounds -Speaking - Greeting - Taking leave and introducing.

Grammar: Naming words - Pronouns - Vocabulary- Homonyms - Homophones - Homographs - Synonyms and Antonyms.

UNIT – 2:

The year 2050 by Theodre. J. Gordon from English for Students of Science - Vikram Sarabhai from Inspiring Lives - Exercises – Questions.

Writing: Official Letters - E-mail letters - Faxes – Memorandums. Listening: Listening for words - Speaking - Making requests and responding to them.

Grammar: Making naming words specific (Part-I) Articles - Genitives and Possessive Adjectives - Vocabulary - Word Formation.

UNIT – 3:

The Connoisseur from Enjoying Everyday English - Sam Pitroda from Inspiring Lives - Exercises – Questions.

Writing: Summarizing. Listening: Listening for word stress – Speaking: Making and accepting an apology - Inviting and accepting/declining an invitation.

Grammar: Making naming words specific (Part-II) Demonstratives - Quantifiers and Distributives - Adjectives - Vocabulary- Collocations - Words that go together.

UNIT – 4:

Human Environment from English for Students of Science - Viswanath Anand from Inspiring Lives - Exercises – Questions.

Writing: Official Reports. Listening: Listening for theme. Speaking: Congratulating - Expressing sympathy and offering condolences - Making a complaint.

Grammar: Tenses - Vocabulary - Phrasal verbs.

UNIT – 5:

Odds against us from Enjoying Everyday English - Charlie Chaplin from Inspiring Lives - Exercises- Questions.

Writing: Note Making. Listening: Announcements and Directions. Speaking: Making presentations. Grammar: Adverbials - Modal verbs - Conjunctions - Prepositions - Vocabulary - Idioms.

Text books:

1. For detailed study: Enjoying Every day English, 2009, A.Rama Krishna Rao, Sangam Books, Hyderabad.
2. English for Students of Science, 2005, A.Roy, P.L.Sharma, Orient Longman, New Delhi.
3. For Non-detailed study: Inspiring lives, 2009, Dr.Jandhyala Ravindranath & Dr.M.Sarat Babu, Maruti Publications, Guntur.

Reference books:

1. Technical Communication Principle and Practice, 2009, Meenakshi Raman and Sangita Sharma, Oxford University Press, New Delhi
2. Essential Grammar in Use, (with CD) 3/e, 2009, Cambridge University Press, New Delhi
3. Everyday Dialogues in English, 2006, Robert J. Dixson, Prentice-Hall of India Ltd., New Delhi
4. Communication Skills for Technical Students, 2008, Farhathullah, T.M., Orient Blackswan, Chennai
5. Developing Communication Skills, 2/e, 2009, Krishna Mohan & Meera Banerji , Macmillan, New Delhi

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I B.Tech	L	T	P	C
	2	1	0	4

13HAS102 ENGINEERING PHYSICS (Common to all Branches)

UNIT - 1: Crystal Structures and Ultrasonics

Crystal Structures: Introduction - Space lattice - Basis - Unit cell - Lattice parameters - Bravais lattices- Crystal Systems - Structures of Simple Cubic - Body Centered Cubic - Face Centered Cubic crystals - Miller Indices - (h k l) planes in crystals - Bragg's law - X-ray diffraction - Laue and Powder Methods.

Ultrasonics: Introduction - Production of ultrasonic waves - Piezoelectric method - Properties of ultrasonic waves - Applications of ultrasonics.

UNIT - 2: Quantum Mechanics and Electron Theory

Quantum Mechanics: Dual nature of light - Matter waves and properties - De Broglie's concept of matter waves - Heisenberg's uncertainty principle - One dimensional time independent Schrodinger's wave equation - Particle in one dimensional potential box - Fermi-Dirac distribution function and effect of temperature.

Semiconductors: Intrinsic and extrinsic semiconductors - Drift and diffusion -Einstein's relation - Hall effect - Direct and indirect band gap semiconductors - p-n junction diode - Zener diode - Light emitting diode – Photodiode.

UNIT - 3: Optics and Lasers

Optics: Interference - Interference in thin films by reflection - Newton's Rings - Diffraction - Fraunhofer Diffraction at single slit - Diffraction grating - Grating spectrum.

Lasers: Laser characteristics - Spontaneous and Stimulated emissions - Basic requirements of a laser - Population inversion - Solid state laser (Ruby laser) - Gas (He-Ne) laser - Semiconductor (GaAs) laser - Applications of lasers.

UNIT - 4: Magnetic materials and Superconductivity

Magnetic Materials: Origin of magnetic moment of an atom - Bohr magneton - Classification of dia - para - ferro magnetic materials on the basis of magnetic moment - Hysteresis curve - Soft and hard magnetic materials - Ferrites and their applications.

Superconductivity: General properties - Meissner effect - Types of superconductors - BCS Theory - Josephson's effect - Applications of superconductors.

UNIT - 5: Advances in Physics

Fiber Optics: Structure of optical fiber - Types of optical fibers - Numerical aperture - Fiber optics in communications - Applications.

Nano Technology: Introduction to nanomaterials - nanoscale - surface to volume ratio - Preparation of Nanomaterials - Ball milling method - Sol-gel method - Chemical vapour deposition methods - Carbon nanowires, nanorods, nanotubes - Thermal, mechanical and electrical properties of nano materials - Applications of nanomaterials.

Text books:

1. Engineering Physics, 2011, M.R. Srinivasan, New Age International, Chennai.
2. Engineering Physics, 4/e, 2013, V. Rajendran and K. Thyagarajan, Tata Mc Graw Hill Publishers, New Delhi.

Reference books:

1. Concepts of Modern Physics, 8/e, 2007, Aurther Beiser, Tata Mc Graw Hill Publishers, New Delhi.
2. Modern Engineering Physics, 2012, A.S. Vasudeva, S. Chand & Co., New Delhi.
3. Materials Science, 1/e, 2004, M. Vijaya and G. Rangarajan, Tata Mc Graw Hill Publishers, New Delhi.
4. Physics, Part I and II (Part I 5/e, 2002, Part II 5/e, 2001), Halliday and Resnick, John Wiley & sons (Asia).
5. Engineering Physics, 7/e, 2006, Gaur & Gupta, Dhanpati Rai Publications, New Delhi.

I B.Tech	L	T	P	C
	2	1	0	4
13HAS103	ENGINEERING CHEMISTRY (Common to all Branches)			

UNIT- 1: Water and Water for Industrial Purpose

Water: Sources of water - Types of Impurities in Water - Hardness of water - Temporary and permanent hardness - Estimation of hardness by EDTA Method - Analysis of water - Dissolved oxygen - Disadvantages of hard water - Methods of treatment of water for domestic purpose - Sterilization - Chlorination – Ozonisation.

Water for industrial purpose: Water for steam making - Boiler troubles - Priming and foaming - Boiler corrosion - Scales and sludge - Caustic embrittlement - Water treatment - Internal treatment - Colloidal - Phosphate - Calgon - Carbonate - Sodium aluminate conditioning of water - External treatment - Ion - exchange process - Demineralization of brackish water – Reverse osmosis.

UNIT – 2: Science of Corrosion

Definition - Types of corrosion - Dry corrosion - (Direct chemical attack) - Wet corrosion - Theories of corrosion and mechanism - Electro chemical theory of corrosion - Galvanic series - Galvanic corrosion - Concentration cell corrosion - Oxygen absorption type - Factors influencing corrosion - Control of corrosion - Cathodic protection - Sacrificial anode and impressed current.

UNIT – 3: Polymers

Polymerization reactions - Basic concepts - Types of polymerization - Addition and condensation polymerization - Plastics -Thermosetting and thermoplastics - Composition - Properties - Engineering uses of teflon, bakelite, nylon and rubber - Processing of natural rubber and compounding .
Elastomers: Buna S - Buna N - Polyurethane Rubber and Silicone Rubber.

UNIT – 4: Phase rule, Structural materials and Refractories

Phase rule: Definition - Terms involved in phase rule - Phase rule equation - Phase diagrams - One component system (water system) - Two component system (lead- silver system).

Structural materials: Cement - Composition of Portland cement - Analysis - Setting and hardening of cement (reactions).

Refractories: Definition - Classification with examples - Criteria of a good refractory material - Causes for the failure of refractory materials.

UNIT – 5: Lubricants and Electro chemistry

Lubricants: Principles and function of lubricants - Classification and properties of lubricants - Viscosity - Flash and fire points - Cloud and pour points - Aniline point - Neutralization number and mechanical strength.

Electro Chemistry: Conductance - Equivalent conductance - Molar conductance – Conductometric titrations - Conductivity Measurements.

Text books:

1. Chemistry for Engineers, 4/e, 2009, Prof. K. N. Jayaveera, Dr. G. V. Subba Reddy and Dr. C. Ramachandraiah, Tata McGraw Hill Publishers, New Delhi.

2. Text book of Engineering Chemistry, 15/e, 2008, Jain and Jain, Dhanpat Rai Publishing Company, New Delhi.
3. A Text book of Engineering Chemistry, 18/e, 2008, S. S. Dara, S. Chand & Co, New Delhi.

Reference books:

1. Engineering Chemistry, 5/e, 2009, Dr. K. B. Chandrasekhar, Dr. U.N. Dash, Dr. Sujatha Mishra, Scitech Publications(India) Pvt. Ltd, Hyderabad.
2. Fuel Cells Principles and Applications, 4/e, 2008, B.Viswanath, M. Aulice Scibioh, Universities Press, Hyderabad.
3. Chemistry of Engineering Materials, 3/e, 2008, C.V. Agarwal, Tara Publication, Varanasi
4. Physical Chemistry, 12/e, 2009, Glasston & Lewis, New Delhi.
5. Engineering Chemistry (Vol.1&2), 5/e, 2004, J C Kuriacose and J. Rajaram,, Tata McGraw- Hill Publishers, New Delhi.

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I B.Tech	L	T	P	C
	3	1	0	5
13HAS104	MATHEMATICS – I (Common to all Branches)			

UNIT – 1: Matrices

Rank - Echelon form and Normal form - Solution of linear system of homogeneous and non-homogeneous equations - Direct methods - Gauss elimination, Gauss Jordan method - Eigen values, Eigen vectors - Properties - Cayley-Hamilton theorem(without proof) - Inverse and powers of a matrix.

UNIT – 2: Calculus

Derivatives and its applications: Taylor's and Maclaurin's series(simple examples) - Functions of several variables - Jacobian - Maxima and minima of functions of two variables - Lagrangian method of undetermined multipliers with three variables only.

Beta and gamma functions - Properties - Evaluation of integrals(simple examples).

Multiple Integrals: Double and triple integrals - Change of variables - Change of order of integration

UNIT – 3: Differential equations and its applications

Differential equations of first order and its applications: Exact, Linear and Bernoulli's equation - Applications to Newton's law of cooling, Law of natural growth and decay - Orthogonal trajectories.

Differential equations of higher order: Non-homogeneous linear differential equations of second and higher order with constant coefficients with RHS term of the type e^{ax} , $\sin ax$, $\cos ax$, polynomials in x , $e^{ax} v(x)$, $x^m v(x)$ - Method of variation of parameters

UNIT - 4: Laplace Transforms and its applications

Laplace transform of standard functions - First shifting theorem - Second shifting theorem - Transform of Derivatives, Integrals, Unit step function, Dirac's delta function and Periodic function - Inverse transform - Convolution theorem - Application of Laplace transforms to ordinary differential equations of first and second order

UNIT - 5: Vector Calculus

Vector Differentiation: Gradient - Divergence - Curl and their properties

Vector integration: Line Integral - Potential function - Area, Surface and volume integrals - Green's, Stoke's and Gauss divergence theorem(excluding their proof) - Verification of Green's, Stoke's and Gauss's theorems.

Text books:

1. Engineering Mathematics, Volume - 1, 2012, E.Rukmangadachari, E.Keshava Reddy, Pearson Educations, Chennai.
2. Engineering Mathematics-I, 2012, T.K.V. Iyengar, B.Krishna Gandhi, S. Ranganatham and M.V.S.S.N. Prasad, S. Chand and Company publishers, New Delhi.

Reference books:

1. Mathematical Methods, 2012, T.K.V. Iyengar, B.Krishna Gandhi, S. Ranganatham and M.V.S.S.N. Prasad, S. Chand and Company Publishers, New Delhi
2. Higher Engineering Mathematics, 34/e, 1999, Dr. B. S. Grewal, Khanna Publishers, Delhi.
3. Engineering Mathematics for JNTU, 2012, B.V. Ramana, Tata McGraw Hill Publishers, New Delhi.
4. Matrices, 29/e, 2006, A R. Vasistha, Krishna Prakashan media (P) Ltd. Meerut.
5. Advanced Engineering Mathematics, 8/e, 2009, Erwin Kreyszig, Wiley India, New Delhi.

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I B.Tech	L	T	P	C
	3	0	0	3
13HAS105	REASONING and APTITUDE (Common to all Branches)			

UNIT – 1:

Numbers and Fractions - H.C.F and L.C.M - Simplification and Roots - Averages - Percentages - Ratio and Proportions - Profit and Loss - Partnership and Share - Simple Interest and Compound Interest

UNIT – 2:

Series - Coding and Decoding - Blood relation - Venn Diagrams - Puzzle test - Problems on ages - Time and Distance - Time and Work - Pipes and Cisterns - Problems on Trains, boats and streams

UNIT – 3:

Allegation and Mixture - Permutation and Combination - Probability - Directions - Completion of Incomplete Pattern – Analogy - Classification - Assertion and Reason

UNIT – 4:

Area – Volume - Surface areas - Height and Distance

UNIT – 5:

Calendar and Clocks - Data Interpretation - Tabulation and Bar graphs - Pie charts and Line graphs - Data Sufficiency

Text books:

1. Quantitative Aptitude, 2012, Dr.R.S.Aggarwal, S.Chand and Company Ltd, New Delhi
2. A Modern Approach to Verbal and Non-Verbal Reasoning, 2012, Dr.R.S.Aggarwal, S.Chand and Company Ltd, New Delhi

Reference books:

1. Quantitative Aptitude for Competitive Examinations, 14/e, 2010, Abhijit Guha, Tata McGraw- Hill Publishers, New Delhi
2. Course in Mental Ability & Quantitative Aptitude, 3/e, 2012, Edgar Thorpe, Tata McGraw-Hill Publishers, New Delhi
3. Fast Track Objective Arithmetic, 2012, Rajesh Verma, Arihant Publications, Meerut
4. Reasoning and Aptitude, 2013, Nem Singh, Made Easy Publications, New Delhi
5. Quantitative Aptitude and Reasoning, 2/e, 2013, R.V. Praveen, PHI Learning Press, New Delhi

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I B.Tech	L	T	P	C
	3	1	0	5

13CSE 101 C PROGRAMMING and DATA STRUCTURES (Common to all Branches)

UNIT-1: Overview of Programming and Introduction to C Language

Computer software - Algorithm - Flowchart - Creating and running programs - Software development methods - Applying software development methods.

Introduction to C Language: Structure of C program - Simple C program - C character set - C Tokens - Keywords and identifiers - Constants and variables - Data types and sizes - Declarations of variables - Managing input and output operations.

Operators and Expressions: Arithmetic operators - Relational operators - Logical operators - Assignment operators - Increment and decrement operators - Conditional operator - Bit-Wise operators - Special operators - Expressions - Type conversion in expressions - Operator precedence and associativity.

Decision making - Branching and looping: Decision making with if statement - The switch statement - The goto statement - While statement - Do-while statement - For statement - Jumps in loops - Jumps out of the program.

UNIT - 2: Arrays and Functions

Arrays: One-dimensional arrays - Declaration - Initialization - Two-dimensional arrays - Declaration - initialization - Multi-dimensional arrays.

Functions: Library Functions - Need for user defined Functions - A Multi-function program - Elements of User defined functions - Definition of functions - Return values and their types - Function calls - Function declaration - Category of functions - Nesting of functions - Recursion - Passing arrays to functions - The scope - Visibility and lifetime of variables – Multi file programs - Preprocessor commands.

UNIT - 3: Pointers and Strings

Pointers: Introduction - Understanding pointers - Accessing the address of a variable - Declaring pointer variables - Initialization pointer variables - Accessing a variable through its pointer - Chain of pointers - Pointer expressions - Pointer increments and scale factor - Pointers and arrays - Pointers and character strings - Array of pointers - Pointers as function arguments - Functions returning pointers - Pointers to functions.

Strings: Introduction - Declaring and initializing string variables - Reading string from terminal - Writing strings to the screen - Arithmetic operations on characters - Putting strings together - Comparison of two strings - String handling functions - Table of strings - String/Data conversion.

UNIT - 4: Structures, Unions and Files

Structures and Unions: Introduction - Defining a structure - Declaring structure variables - Accessing structure members - Structure initialization - Copying and comparing structure variables - Operations on Individual members - Arrays of structures - Arrays within structures - Structures within structures - Structures and functions - Unions - Size of structures - Bit fields – Type def – Enum.

Files: Introduction - Types of files - Defining and opening a file - Closing a file - Input/Output operations on files - Error handling during I/O operations - Random access to files - Command line arguments - Application of command line arguments.

UNIT - 5: Data structures, Searching and Sorting

Data structures: Single linked list - Operations - Implementation - Linked list with header - Stacks - Stack operations - Array implementation of stack - Linked implementation of stack - Infix - Prefix - Postfix - Conversion from infix to prefix notation - Evaluation of prefix expression - Conversion from infix to postfix notation - Evaluation of postfix expression - Queues - Array implementation of queue - Linked implementation of queue.

Searching and Sorting: Bubble sort - Selection sort - Insertion sort - Quick sort - Merge sort - Linear and Binary search methods.

Text books:

1. Programming in C and Data Structures, 2/e, 2012, E.Balaguruswamy, Tata McGraw Hill, New Delhi.
2. Programming in C and Data Structures, 2010, J.R.Hanly, Ashok N. Kamthane and A. Ananda Rao, Pearson Education, Chennai

Reference books:

1. Let Us C , 8/e, 2008, Yashavant P Kanetkar, BPB publication, New Delhi
2. The C Programming Language, 2/e, 2005, B.W. Kernighan, Dennis M.Ritchie, PHI/Pearson Education, New Delhi.
3. Problem Solving and Program Design in C, 5/e, 2009, J R Hanly, E B. Koffman, Pearson Education, New Delhi
4. C and Data structures, 3/e, 2009, P. Padmanabham , B.S. Publications, Hyderabad.
5. Computer Science : A Structured Programming Approach using C, 3/e, 2007,B. A. Forouzan, R.F. Gilberg, Thomson Publication, Haryana

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I B.Tech	D	T	P	C
	5	0	0	5
13MEC101	ENGINEERING DRAWING (Common to all Branches)			

UNIT -1: Introduction to Engineering Drawing

Principles of engineering graphics and their significance - Drawing instruments and their use - Conventions in drawing - Lettering - BIS conventions.
Curves used in engineering practice: (a) Conic sections (b) Cycloidal curves and (c) Involutives

UNIT - 2: Projection of Points and Lines

Principles of orthographic projections - Conventions - First and third angle projections - Projection of points and lines inclined to one or both planes – Finding true lengths and traces

UNIT - 3: Projection of Planes and Solids

Projections of regular plane surfaces - Projections of regular solids inclined to both HP and VP.

UNIT - 4: Section of Solids and Development of Surfaces

Sectional planes and sectional views of right regular solids: Prism, cylinder, pyramid and cone. True shape of the sections.

Development of surfaces of right regular solids: Prism, cylinder, pyramid, cone and their sectional parts.

UNIT - 5: Isometric and Orthographic Projections

Principles of isometric projection - Isometric scale - Isometric views - Conventions - Isometric views of lines, planes, simple and compound solids - Isometric projection of objects having non- isometric lines Isometric projections of spherical parts.

Conversion of isometric projections/views into orthographic views – Conventions.

Text books:

1. Engineering Drawing, 51/e, 2012, N.D. Bhatt, Charotar Publishing House Pvt. Ltd., Anand.
2. Engineering Drawing, n/e, 2012, K.L. Narayana, P. Khanniah, Scitech Publishers, New Delhi.

References books:

1. Engineering Drawing and Graphics, 2/e, 2011, Venugopal, New age publishers, Chennai
2. Engineering Drawing, 4/e, 2009, Venkata Reddy, B.S. Publishers, Hyderabad
3. Engineering Drawing, 3/e, 2009, Johle, Tata McGraw-Hill, New Delhi
4. Engineering Drawing, 2/e, 2010, Shah and Rana, Pearson Education, New Delhi
5. Engineering Drawing, 5/e, 2013, Basant Agrawal and CM Agrawal, Tata McGraw-Hill, New Delhi

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I B. Tech	L	T	P	C
	0	0	3/2 each	3
13HAS106	ENGINEERING PHYSICS and ENGINEERING CHEMISTRY LAB			
	(Common to all Branches)			

ENGINEERING PHYSICS LAB

S.No.	Name of the Experiment
1.	Diffraction grating - Measurement of wavelength of given Laser
2.	Torsional pendulum: Determination of rigidity modulus of given metal wire
3.	Determination of magnetic field along the axis of a current carrying circular coil - Stewart Gees method
4.	Determination of A.C frequency using Sonometer
5.	Verification of transverse laws of stretched string using Sonometer
6.	Melde's experiment: Determination of frequency of electrically driven Tuning fork
7.	Determination of numerical aperture and acceptance angle of an optical fiber
8.	Determination of particle size using a laser source
9.	Diode characteristics
10.	Zener diode characteristics
11.	LED characteristics
12.	Determination of energy band gap
13.	Hall effect: Determination of Hall coefficient and mobility of charge carriers
14.	Newton's rings – Determination of radius of curvature of given Plano convex lens
15.	Determination of Dielectric constant

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. Preparation of Standard EDTA and Estimation of Copper
5. Determination of Manganese in Steel and Iron in Cement
6. Determination of strength of the given Hydrochloric acid against standard sodium hydroxide Solution by Conductometric titration
7. Determination of viscosity of the given oils through Redwood viscometer
8. Estimation of dissolved oxygen in given water sample
9. Determination of pH of a given solution by pH meter
10. Estimation of alkalinity of water

SREENIVASA INSTITUTE of TECHNOLOGY and MANAGEMENT STUDIES

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13HAS107	ENGLISH LANGUAGE and COMMUNICATION SKILLS LAB				
	(Common to all Branches)				

Syllabus:

The following course content is prescribed for the English Language Laboratory sessions:

1. Introduction to the Sounds of English - Vowels - Diphthongs - Consonants
2. Introduction to Stress - Intonation
3. Inflections
4. Conversation skills - Greeting and introducing - Asking for permission - Making request - Offering help - Giving directions and suggestions etc.
5. Role Play
6. Oral Presentations- Prepared and Extempore
7. Speaking on the mobiles and telephone conversation
8. Describing Objects - Situations - People
9. Information Transfer
10. Debate

Suggested software:

- Globarena software, Hyderabad
- English Pronouncing Dictionary, Daniel Jones 17/e with CD, Cambridge University Press, New Delhi.
- DELTA's key to the Next Generation TOEFL Test, 6 audio CDS, 2007, New Age International Publishers, Critical Study, New Delhi.
- Oxford Advanced Learners' Dictionary with CD, 8/e, 2010, Oxford.
- Cambridge Advanced Learners' English Dictionary with CD, 3/e, 2010.
- Murphy's English Grammar with CD, 2004, Cambridge.

References books:

1. Spoken English, 2009, R. K. Bansal and J. B. Harrison, Edn, Orient Longman, Mumbai.
2. Speaking English Effectively, 2/e, Krishna Mohan & NP Singh, Macmillan, New Delhi
3. A Practical Course in English Pronunciation, 2004, J. Sethi, Kamlesh Sadanand & D.V. Jindal, Prentice-Hall of India Pvt. Ltd., New Delhi.
4. Body Language - Your Success Mantra, 2009, Dr Shalini Verma, S.Chand & Co, New Delhi.
5. A Handbook for English language Laboratories, 2009, E.Sureshkumar, P.Sreehari, Foundation Books, Cambridge University Press, Chennai.

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13CSE 102 C PROGRAMMING and DATA STRUCTURES LABORATORY
(Common to all Branches)

Exercise-1:

- a. Write a c program to convert the temperature unit from Fahrenheit to Celsius using the formula $C = (F-32)$
- b. Assume that any month is of 30 days. Now you are given total days. Write a C program to find out the exact number of Years, Months & Days
- c. Write a c program to calculate the simple interest.

Exercise-2:

- a. Write a program that prints the given 3 integers in ascending order using if - else.
- b. Write a program to calculate commission for the input value of sales amount. Commission is calculated as per the following rules:
 - i) Commission is **NIL** for sales amount Rs. 5000.
 - ii) Commission is 2% for sales when sales amount is > Rs. 5000 and <= Rs. 10000.
 - iii) Commission is 5% for sales amount > Rs. 10000.
- c. A character is entered through keyboard. Write a program to determine whether the character entered is a capital letter, a small case letter, a digit or a special symbol. The following table shows the range of ASCII values for various characters.

Characters	ASCII values
A - Z	65 - 90
a - z	97 - 122
0 - 9	48 - 57

Special Symbols 0 - 47, 58 - 64, 91- 96, 123 – 127

Exercise-3:

- a. Write a program, which takes two integer operands and one operator from the user, performs the operation and then prints the result. (Consider the operators +,-,*, /, %, use switch statement)
- b. Write a program to find the grace marks for a student using switch. The user should enter the class obtained by the student and the number of subjects he has failed in. Use the following rules:
 - i) If the student gets first class and the number of subjects failed in is >3, then no grace marks are awarded. If the number of subjects failed in is < or = 3 then the grace is 5 marks per subject.
 - ii) If the student gets second class and the number of subjects failed in is >2, then no grace marks are awarded. If the number of subjects failed in is < or = 2 then the grace is 4 marks per subject.
 - iii) If the student gets third class and the number of subjects failed in is >1, then no grace marks are awarded. If the number of subjects failed in is = 1 then the grace is 5 marks per subject.

Exercise-4:

- a. Write a C program to find the sum of individual digits of a positive integer.
- b. A Fibonacci sequence is defined as follows: the first and second terms in the sequence are 0 and 1. Subsequent terms are found by adding the preceding two terms in the sequence. Write a C program to generate the first n terms of the sequence.

Exercise-5:

- a. i) A perfect number is a number that is the sum of all its divisors except itself. Six is the perfect number. The only numbers that divide 6 evenly are 1, 2, 3 and 6 (i.e., $1+2+3=6$).
- ii) An abundant number is one that is less than the sum of its divisors (Ex: $12 < 1+2+3+4+6$).

- iii) A deficient number is one that is greater than the sum of its divisors (Ex: $9 > 1+3$).
Write a program to classify N integers (Read N from keyboard) each as perfect, abundant or deficient.
- b. An amstrong number is a number that is the sum of the cubes of its individual digits.
Write a c program to print amstrong numbers below 1000.

Exercise-6:

- a. Write a C program to generate all the prime numbers between 1 and n, where n is a value supplied by the user.
- b. Write a C program to calculate the following sum: $\text{sum} = 1 - x^2/2! + x^4/4! - x^6/6! + x^8/8! - x^{10}/10!$

Exercise-7:

- a. Write a C program to find both the largest and smallest number in a list of integers.
- b. Write a C program that uses functions to perform the following:
i) Addition of Two Matrices ii) Multiplication of Two Matrices

Exercise-8:

- a. Write a C program to find the roots of quadratic equation
- b. Write C programs that use both recursive and non-recursive functions
i) To find the factorial of a given integer.
ii) To find the GCD (greatest common divisor) of two given integers.

Exercise-9:

- a. Write a c program using pointers to read in an array of integers and print its elements in reverse order.
- b. Swap/exchange values of two integer variables using function.

Exercise-10:

- a. Write a C program that uses functions to perform the following operations:
i) To insert a sub-string in to a given main string from a given position.
ii) To delete n Characters from a given position in a given string.
- b. Write a C program to determine if the given string is a palindrome or not

Exercise-11:

- a. Write a C program that displays the position or index in the string S where the string T begins, or – 1 if S doesn't contain T.
- b. Write a C program to count the lines, words and characters in a given text.

Exercise-12:

- a. Write a C program to generate Pascal's triangle.
- b. Write a C program to construct a pyramid of numbers.

Exercise-13:

- a. 2's complement of a number is obtained by scanning it from right to left and complementing all the bits after the first appearance of a 1. Thus 2's complement of 11100 is 00100. Write a C program to find the 2's complement of a binary number.
- b. Write a C program to convert a Roman numeral to its decimal equivalent.

Exercise-14:

You are supposed to generate a result table which consists of student id, student name, marks of three subject and total marks. Write a program which takes input for ten students and displays result table. Also display student information separately who got the highest total. Use structures

Exercise-15:

- Write a C program that uses functions to perform the following operations:
i) Reading a complex number ii) Writing a complex number
iii) Addition of two complex numbers iv) Multiplication of two complex numbers
(Note: represent complex number using a structure.)

Exercise-16:

- a. Write a C program which copies one file to another.
- b. Write a C program to reverse the first n characters in a file.
(Note: The file name and n are specified on the command line.)

Exercise-17:

- a. Write a C program to display the contents of a file.
- b. Write a C program to merge two files into a third file (i.e., the contents of the first file followed by those of the second are put in the third file)

Exercise-18:

Write a C program that uses functions to perform the following operations on singly linked list.:

- i) Creation ii) Insertion iii) Deletion iv) Traversal

Exercise-19:

Write C programs that implement stack (its operations) using i) Arrays ii) Pointers

Exercise-20:

Write C programs that implement Queue (its operations) using i) Arrays ii) Pointers

Exercise-21:

Write a C program that uses Stack operations to perform the following:

- i) Converting infix expression into postfix expression
- ii) Evaluating the postfix expression

Exercise-22:

Write a C program that implements the following sorting methods to sort a given list of integers in ascending order i) Bubble sort ii) Selection sort

Exercise-23:

Write C programs that use both recursive and non recursive functions to perform the following searching operations for a Key value in a given list of integers: i) Linear search ii) Binary search

Exercise-24:

Write C program that implements the Quick sort method to sort a given list of integers in ascending order.

Exercise-25:

Write C program that implement the Merge sort method to sort a given list of integers in ascending order.

Reference books:

1. Programming in C and Data Structures, 2/e, 2012, E.Balaguruswamy , Tata McGraw-Hill, New Delhi.
2. Programming in C and Data Structures, 2010, J.R.Hanly, Ashok N. Kamthane and A. Ananda Rao, Pearson Education, Chennai.
3. Let Us C, 8/e, 2008, Yashavant P.Kanetkar, BPB Publication, New Delhi.
4. Computer Basics and C Programming, 2008, V. Rajaraman, PHI Publications, New Delhi.

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13MEC102 ENGINEERING AND I.T. WORKSHOP (Common to all Branches)

Engineering workshop

Objectives: The budding Engineer may turn out to be a technologist, scientist, entrepreneur, practitioner, consultant etc. There is a need to equip the engineer with the knowledge of common and newer engineering materials as well as shop practices to fabricate, manufacture or work with materials. Essentially he should know the labor involved, machinery or equipment necessary, time required to fabricate and also should be able to estimate the cost of the product or job work. Hence engineering work shop practice is included to introduce some common shop practices and on hand experience to appreciate the use of skill, tools, equipment and general practices to all the engineering students.

1. Trades for exercises:

- Carpentry – Three joints (exercises) from: Making Middle lap T joint, Dove tail lap joint, Mortise and Tenon joint and Bridle T joint from out of 300 x 50 x 35 mm soft wood stock.
- Fitting – Three joints (exercises) from: Square joint, V joint, Half round joint and Dove tail joint out of 50 x 50 x 5 mm M.S. flat piece.
- Sheet metal – Three jobs (exercises) from: Tray, Cylinder, Open scoop and Frustum of pyramid out of 22 or 20 gauge G.I. sheets.
- House-wiring – Three jobs (exercises) from: Wiring for two lamps (bulbs) with independent switch controls (series and parallel), wiring for stair case lamp, wiring for tube light and water pump with single phase starter.

2. Trades for demonstration:

- Study of Lathe
- Drilling Machine
- Power Hacksaw
- Grinding Machine

IT 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.

Internet & World Wide Web module introduces the different ways of hooking the PC on to the internet from home and workplace for usage of the internet. Usage of web browsers, email, newsgroups and discussion forums would be covered. In addition, awareness of cyber hygiene, i.e., protecting the personal computer from getting infected with the viruses, worms and other cyber attacks would be introduced.

Productivity tools module would enable the students in crafting professional word documents, excel spread sheets, power point presentations and personal web sites using the Microsoft suite of office tools and LaTeX. (It is recommended to use Microsoft office 2007 in place of MS Office 2003)

PC Hardware

Exercise 1 – 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.

Exercise 2 – 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.

Exercise 3 – 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.

Exercise 4 – Task 4: Every student should install Linux on the computer. This computer should have windows installed. The system should be configured as dual boot with both windows and Linux. Lab instructors should verify the installation and follow it up with a Viva

Exercise 5 – Task 5: 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

Exercise 6 – Task 6: 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.

Office tools:

LaTeX and Word

Exercise 7 – Word Orientation: The mentor needs to give an overview of LaTeX and Microsoft (MS) office 2007/ equivalent (FOSS) tool word: Importance of LaTeX and MS office 2007/ equivalent (FOSS) tool Word as word Processors, Details of the four tasks and features that would be covered in each, Using LaTeX and word – Accessing, overview of toolbars, saving files, Using help and resources, rulers, format painter in word.

Task 1 : Using LaTeX and Word 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.

Excel

Exercise 8 - Excel Orientation: 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 1: Creating a Scheduler - Features to be covered:- Gridlines, Format Cells, Summation, auto fill, Formatting Text

LaTeX and MS/equivalent (FOSS) tool Power Point

Exercise 9 - Task1: 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).

Exercise 10 - 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

Internet & World Wide Web 2 Exercises

Exercise 11 - 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.

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

Exercise 12 - Task 2: 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 the instructors.

Cyber Hygiene: Students would be exposed to the various threats on the internet and would be asked to configure their computers to be safe on the internet. They need to first install an anti virus software, configure their personal firewall and windows update on their computer.

Reference books:

1. Comdex Information Technology course tool kit , 2003, Vikas Gupta, WILEY Dream tech, New Delhi
2. The Complete Computer upgrade and repair book, 3/e, 2008, Cheryl A Schmidt, WILEY Dream Tech, New Delhi
3. Introduction to Information Technology, 2008, ITL Education Solutions limited, Pearson Education, New Delhi
4. PC Hardware and A+ Handbook, 2004, Kate J. Chase, Microsoft press
5. LaTeX Companion, 2/e, 2002, Leslie Lamport, Addison Wesley, New Delhi
6. IT Essentials PC Hardware and Software Companion Guide, 3/e, 2008, David Anfinson and Ken Quamme, CISCO Press, Pearson Education, New Delhi
7. IT Essentials PC Hardware and Software Labs and Study Guide, 3/e, 2008, Patrick Regan, CISCO Press, Pearson Education, New Delhi
8. Troubleshooting, Maintaining and Repairing PCs, 5/e, 2008, S.J. Bigelow, TMH, New Delhi

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II B. TECH I-SEMESTER (CSE)	L	P	C
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13HAS211 MATHEMATICS – II (Common to all Branches)

UNIT – 1: Solution of Algebraic, Transcendental Equations and Interpolation

Solution of Algebraic, Transcendental Equations: Introduction - The Bisection method - The method of False position - The Iteration method - Newton-Raphson method

Interpolation: Introduction - Finite differences - Forward differences - Backward differences - Newton's forward and backward difference formulae for interpolation - Lagrange's formula.

UNIT – 2: Numerical Differentiation, Numerical Integration and Numerical solution of Ordinary Differential equations

Numerical differentiation, Numerical integration: Trapezoidal rule - Simpson's 1/3 Rule - Simpson's 3/8 Rule.

Numerical solution of Ordinary Differential equations: Solution by Taylor's series - Picard's method of successive approximations - Euler's method - Runge-Kutta methods - Predictor- Corrector method - Milne's method.

UNIT – 3: Fourier Series

Determination of Fourier coefficients - Fourier series - Even and odd functions - Fourier series in an arbitrary interval - Even and odd periodic continuation - Half-range Fourier sine and cosine expansions.

UNIT – 4: Fourier Transforms

Fourier integral theorem(only statement) - Fourier sine and cosine integrals - Fourier transform - Fourier sine and cosine transforms - Properties - Inverse transforms - Finite Fourier transforms.

UNIT – 5: Partial Differential equations

Formation of partial differential equations by elimination of arbitrary constants and arbitrary functions - Method of separation of variables.

Text Books:

1. Mathematical Methods, 2012, T. K. V. Iyengar, B. Krishna Gandhi, S. Ranganatham and
2. M.V.S.S.N. Prasad, S. Chand and Company Publishers, New Delhi. Engineering Mathematics, Volume-II, 2013, E. Rukmangadachari, E. Keshava Reddy, Pearson Education, Chennai.

Reference Books:

1. Engineering Mathematics for JNTU, 3/e, 2008, B.V. Ramana, Tata McGraw Hill Publishers, New Delhi.

2. Introductory methods of Numerical Analysis, 5/e, 2005, S.S. Sastry, Prentice Hall of India, New Delhi.
3. Higher Engineering Mathematics, 34/e, 1999, Dr. B. S. Grewal, Khanna Publishers, New Delhi.
4. Advanced Engineering Mathematics, 8/e, 2009, Erwin Kreyszig, Wiley India, New Delhi.
5. Numerical Methods for Scientific and Engineering Computation, 4/e, 2004, M.K. Jain, S.R.K. Iyengar, R.K. Jain, New Age International Publication, New Delhi.

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II B. TECH I-SEMESTER (CSE)

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13MBA 214 BUSINESS MANAGEMENT (Common to all Branches)

UNIT - 1: Business Economics

Nature and scope of business economics - **Demand analysis:** Demand Determinants, Law of Demand
- **Elasticity of demand:** Types, Measurement and Significance of Elasticity of Demand

UNIT - 2: Production and Cost Analysis

Cost concepts - Production Function - Laws of returns- Production Management-Plant Layout - Basic concepts of MIS and ERP- Total Quality Management (TQM), Six Sigma, Business Process Re-Engineering.

Unit – 3: Business Organisation and Management

Features of Business Types of Business Organisations: Sole proprietorship, Partnership, Joint Stock Company, and Public enterprises.

Management: Nature, significance and functions of Management.

Unit – 4: HR and Marketing

Introduction to HR, Functions of HR Manager, (Manpower Planning Recruitment, Selection, Training & Development, Performance Appraisal), Grievances handling and negotiations.

Marketing: Functions of Marketing- Marketing Mix- Pricing methods- Promotional practices and Channels of distribution - Product Life Cycle - Basic concepts of Advertising-Marketing Research - e-Marketing - Marketing through social media, pricing strategies in internet era.

Unit – 5: Financial Management

Objectives and Functions of Financial Management - Sources of Long-term and Short-Term Finance - Cash Budgeting Techniques (Payback Period Method, ARR, NPV, IRR).

Text Books:

1. Managerial Economics and Financial Analysis, 4/e, 2011, Dr.A.R.Aryasri, TMH, New Delhi.
2. Management Science, 1/e, 2009, Dr. G. Sreenivasa Rao, High tech Publishers, Hyderabad.
3. Management Science, 3/e, 2008, A.R.Aryasri, TMH, New Delhi.
4. Introduction to Management Science, 1/e, 2011, P.Vijaykumar, Cengage Learning India, New Delhi

Reference Books:

1. Managerial Economics, Analysis, Problems and Cases, 17/e, 2011, P.L.Mehta, Sultan Chand & Sons, New Delhi.
2. Production and Operations Management, 3/e, 2011, Aswathappa .K, Himalaya Publishing House, Mumbai.
3. Marketing Management, 4/e, 2010, Rajan Saxena, TMH, New Delhi.
4. Personnel and Human Resource Management, 2009, Subba Rao, HPIL.
5. Financial Management, 2011, I.M. Pandey, Vikas Publishers, Hyderabad.
6. Entrepreneurship Development, 2009, S.S.Khanka, S.Chand and Company Limited, New Delhi.

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II B. TECH I-SEMESTER(CSE)

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13ECE 211

ELECTRONIC DEVICES AND CIRCUITS

(Common to ECE,EEE,CSE,IT,EIE)

UNIT-1: Junction Diode Characteristics

Open circuited PN junction- Energy band diagram of PN diode- PN diode as a rectifier (forward and reverse bias)- Current components- Law of junction- Diode equation- V-I characteristics of PN diode- Characteristics piece-wise linear approximation- Temperature dependence- Transition and diffusion capacitances- Diode resistances- Diode equivalent circuits- Break down mechanisms in semiconductor diodes- Zener diode-Tunnel diode- Varactor diode- operation and characteristics.

UNIT-2: Rectifiers- Filters and Regulators

HWR- FWR- BR- Harmonic components in rectifier circuits- Inductor filter- Capacitor filter- L-section filter- π -section filter- Comparison of various filter circuits in terms of ripple factor- Problems on rectifiers- Simple circuit of regulator using zener diode- Series and Shunt voltage regulators- Simple problems on voltage regulators.

UNIT-3: Transistor and FET Characteristics

Transistor Construction- Operation- symbol- equivalent circuit- Detailed study of current components- CB- CE- CC Configurations- input – output characteristics- parameter calculations and relationships- Transistor as an amplifier.

FET: JFET – Construction- Operation- Symbol- Pinch-off voltage- V-I characteristics- MOSFET: Characteristics in Enhancement and Depletion modes. SCR – UJT

Biasing and Stabilisation: BJT biasing- DC equivalent model- Criteria for fixing operating point- DC and AC load lines- Fixed bias- Emitter feedback bias- Voltage divider bias- Collector to base bias- Bias stability- Stabilization against variations in V_{BE} and β - Bias compensation- Thermal run away- Thermal stability- Biasing of JFET and MOSFET.

UNIT-4: BJT Amplifiers

Small signal low frequency transistor amplifier circuits: h- parameter representation of transistor- Measurement of h-parameter- Analysis of single stage transistor CE- CB- CC amplifiers: Voltage gain- Current gain- Input impedance- Output impedance- RC coupled amplifier- Problems.

UNIT-5: FET Amplifiers

Small signal model of FET (JFET AND MOSFET)- Generalized FET amplifier- CS- CD- CG amplifiers- Comparison between BJT and FET- Simple problems- RC coupled amplifier- FET as Voltage variable resistor- Comparison between BJT and FET.

Text Books:

1. Electronic Devices and Circuits, 2nd Edition, 2007 J.Millman, C.C.Halkias, and Satyabratha Jit , Tata McGraw Hill, NewDelhi.
2. Electronic Devices and Circuits, 9th Edition, 2006, R.L.Boylestad and Louis Nashelsky, Pearson/Prentice Hall, NewDelhi.

Reference Books:

1. Electronic Devices and Circuits, 6th Edition, 2004, T.F.Bogart Jr., J.S.Beasley and G.Rico, Pearson Education, NewDelhi.
2. Principles of Electronic circuits, 2nd Edition, 1998, S.G.Burns and P.R.Bond, Galgotia Publications, Gurgaon.
3. Electronic Devices and Circuits, 2nd Edition, 2005, Dr.K.Lalkishore, B.S.Publications, Hyderabad.
4. Microelectronics, 2nd Edition, 27th Reprint, 2012, J.Millman and A. Grabel, Tata McGraw Hill, NewDelhi.
5. Electronic Devices and Circuits, 3rd Revised Edition, 2010, A.P.Godse, U.A.Bakshi, Technical Publications, Pune.

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II B. TECH I SEMESTER

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13HAS212 MATHEMATICAL FOUNDATIONS OF COMPUTER SCIENCE

(Common to CSE, IT)

UNIT - 1: Mathematical logic

Statements and Notations - Connectives(Negation, Conjunction , Disjunction, Conditional and Biconditional) - Statements formulas and truth tables - Well formed formulas, Tautologies - Equivalence of formulas - Duality law - Tautological implications - Normal forms(DNF, CNF , PDNF, PCNF) - Theory of inference for statement calculus: Validity using truth tables - Rules of inference - Consistency of premises and indirect method of proof.

UNIT - 2: Predicate calculus

Predicates - The statement function - Variables - Quantifiers - Predicate formulas - Free and Bound variables - The Universe of discourse - Theory of inference for predicate calculus: Valid formulas and equivalences - Some valid formulas over finite universes - Special valid formulas involving quantifiers.

UNIT – 3: Relations & Functions

Relations: Properties of Binary relations, equivalence - Closure of relations - Compatibility and Partial ordering relations - Hasse diagram - Lattices (Basic Concepts).

Functions: Inverse function - Composition of functions - Recursive functions.

Pigeon hole principles and its applications.

UNIT - 4: Algebraic Structures

Algebraic systems - Examples and general properties - Semi groups - Monoids - Groups and subgroups - Homomorphism and Isomorphism.

UNIT - 5: Graph Theory

Basic terminology - Multi graphs - Weighted graphs - Digraphs and Relations - Representations of graphs (incidence Matrix, Adjacency Matrix) - Operations on graphs - Isomorphism and sub graphs.

Paths and circuits - Graph traversals(DFS, BFS) - Shortest paths in weighted graphs - Eulerian paths and circuits - Hamiltonian paths and circuits - Planar graph - Graph coloring - Spanning trees - Minimum spanning trees - Krushkal’s algorithm - Prim’s algorithm.

Text books:

1. Discrete Mathematical Structures with Applications to Computer Science, 27/e, 2006, J.P. Tremblay and R. Manohar, Tata McGraw Hill Publishers, New Delhi.
2. Elements of Discrete Mathematics – A Computer Oriented Approach, 3/e, 2008, C.L. Liu, D.P. Mohapatra, Tata McGraw Hill Publishers, New Delhi.

Reference Books:

1. Discrete and Combinational Mathematics – An Applied introduction, 5/e, 2008, Ralph. P. Grimaldi, Pearson Education, New Delhi.
2. Discrete Mathematics and its applications, 6/e, 2008, Kenneth H. Rosen, Tata Mc Graw Hill Publishers, New Delhi.
3. Discrete Mathematics for Computer Science, 4/e, 2007, Gary Haggard, John Schlipf, Sue Whitesides, Thomson Pulication, New Delhi.
4. Discrete Mathematics for Comuter Scientists & Mathematicans, 2/e, 2007, Mott, Kandel, Banker, Prentice Hall India, New Delhi.
5. Discrete Mathematics, 2/e, 2006, Lipschutz, Lipson, Schaum’s outlines, Tata Mc Graw Hill Publishers, New Delhi.

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II B. TECH I-SEMESTER(CSE)

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13EEE 213 BASIC ELECTRICAL ENGINEERING

UNIT - 1: Introduction to Electrical Engineering

Ohm's law - Basic circuit components - Kirchoff's laws - Simple problems.

Basic definitions - Types of elements - Types of sources - Resistive networks - Inductive networks - Capacitive networks – Series-parallel circuits – Star-delta and Delta-star transformation - Network theorems-Superposition and thevenin's theorems-Analysis of DC networks.

UNIT - 2: Alternating Quantities

Principles of AC voltages - Waveforms and Basic definitions - Root Mean Square values and average values of alternating currents and voltages - Form factor and peak factor - Phasor representation of alternating quantities - The J-operator and phasor algebra - Analysis of AC circuits with single basic network elements - Single phase series and parallel circuits.

UNIT - 3: Transformers

Principles of operation - Constructional details - Losses and efficiency - Regulation of transformer - Testing: O.C and S.C tests.

UNIT - 4: D.C Generators and Motors

Principle of operation of DC machines - Types of DC generators - EMF equation In DC generator - OCC of a DC shunt generator.

Principle of operation of DC motors - Types of DC motors - Torque equation - Losses and efficiency calculation in DC motors - Swinburnes tests.

UNIT - 5: A.C Machines

Principle of operation of induction motor - Slip - Rotor frequency - Torque - (simple problems)

Text books:

1. Circuits and Network Analysis and Synthesis,4/e 2013, A.Sudhakar, and Shyammohan S.Palli Tata Mcgraw-Hill-publishing Pvt. Ltd., Noida.
2. Principle of Electrical Engineering, 2/e 2009, V.K Mehtha, and Rohit Mehta, S Chand Publications Delhi.

References books:

1. Basic Electrical Engineering, 3/e 2009, M.S Naidu and S Kamakshaiah, Tata Mcgraw-Hill-publishing Pvt. Ltd., Noida.
2. Theory and Problems of Basic Electrical Engineering, 1/e 2009, DP Kothari and I J Nagrath Prentice-Hall of India Pvt. Ltd., New Delhi.

3. Electrical and Electronics Technology, 8/e 2003, I McKenzie Smith, John Hiley, and Keith Brown, Pearson Education India, New Delhi.
4. Basic Electrical Engineering, 2/e 2007, Nagasarkar and Sukhija, Oxford Press, New Delhi.
5. Basic Electrical Engineering, 3/e 2008, KB. Madhusahu, Scitech Publications India Pvt Ltd, Chennai.

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II B. TECH I-SEMESTER(CSE)

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13CSE 211 ADVANCED DATA STRUCTURES through C++ (Common to CSE, IT)

UNIT - 1: Class Overview

Class – Objects - Class members - Access control - Class scope - Static class members - Inline functions - Friend functions - This pointer - Dynamic memory allocation and deallocation (New and Delete) - Constructors and destructors - Function over loading - Operator overloading - Inheritance basics - Base class access control - Inheritance types - Runtime polymorphism using virtual functions - Generic programming - Function and class templates.

UNIT - 2: Review of Basic Data Structures and Dictionaries

Algorithms - Performance analysis - Time complexity and space complexity - Review of basic data structures - The list ADT - Stack ADT - Queue ADT - Implementation using template classes in C++, Dictionaries - Linear list representation - Skip list representation - Operations insertion - Deletion and searching.

UNIT - 3: Hashing, Priority Queues and Binary Search Trees

Hash table representation of dictionary - Hash functions - Collision resolution - Separate chaining - Open addressing - Linear probing - Quadratic probing - Double hashing – Rehashing - Extendible hashing and comparison of hashing with skip lists

Priority Queues: Definition – ADT - Realizing a priority queue using heaps – Definition – Insertion – Deletion

Binary search trees: Definition – ADT – Implementation – Operations – Searching - Insertion and deletion

UNIT - 4: Balanced Trees

AVL Trees – Definition - Height of an AVL Tree - Operations – Insertion - Deletion and Searching - Introduction to Red–Black trees - B-Trees - B-Tree of Order m - Height of B-Tree – Insertion - Deletion and Searching

UNIT - 5: Pattern Matching and Tries

Pattern matching algorithms - Brute Force - The Boyer – Moore algorithm - The Knuth-Morris-Pratt algorithm - Standard tries - Compressed tries - Suffix tries

Text Books:

1. Data structures and Algorithms using C++, 1/e, 2012, Ananda Rao Akepogu and Radhika Raju Palagiri, Pearson Education, New Delhi
2. Data structures, Algorithms and Applications in C++, 2/e, 2000, S.Sahni, University Press (India) Pvt.Ltd, Universities Press Orient Longman Pvt. Ltd.

Reference Books:

1. Data structures and Algorithms in C++, 1/e, 2004, Michael T.Goodrich, R.Tamassia and Mount, John Wiley and Sons. Replica Press Pvt. Ltd., Kundli
2. Data structures and Algorithm Analysis in C++, 2/e, 2006, Mark Allen Weiss, Pearson Education. Ltd., New Delhi
3. Data structures and algorithms in C++, 3/e, 2005, Adam Drozdek, Thomson, India
4. Data structures using C and C++, 2/e, 2002, Langsam, Augenstein and Tanenbaum, Prentice Hall Inc.New Delhi
5. Problem solving with C++ The OOP, 4/e, 2003, W.Savitch, Pearson education. New Delhi

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II YEAR B.TECH -I SEM (CSE)

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13CSE 212 DATA STRUCTURES LAB (Common to CSE, IT)

Objectives:

- To make the student learn a object oriented way of solving problems.
- 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 atleast 64 MB RAM and 100 MB free disk space
- C++ compiler and STL Recommended

Exercise 1 :

Write a C++ program to illustrate the following concepts: a) Class. b) Constructors.

Exercise 2 :

Write a C++ program to illustrate the concept of unary and binary Operator Overloading.

Exercise 3 :

Write a C++ program to illustrate the following concepts: a) All types of Inheritance. b) Virtual Functions.

Exercise 4 :

Write a C++ program to illustrate the following concepts: a) Function Templates b) Class Templates

Use Class Templates in the following Programs

Exercise 5 :

Write C++ programs to implement the following using an array.

- a) Stack ADT b) Queue ADT

Exercise 6 :

Write C++ programs to implement the following using a singly linked list.

- a) Stack ADT b) Queue ADT

Exercise 7 :

Write C++ programs to implement the deque (double ended queue) ADT using a doubly linked list and an array.

Exercise 8 :

Write a C++ program to perform the following operations:

- a) Insert an element into a binary search tree.
- b) Delete an element from a binary search tree.
- c) Search for a key element in a binary search tree.

Exercise 9 :

.Write C++ programs that use non-recursive functions to traverse the given binary tree in

- a)Preorder b) inorder and c) postorder.

Exercise 10 :

Write C++ programs for implementing the following sorting methods:

- a) Merge sort b) Heap sort

Exercise 11 :

.Write a C++ program to perform the following operations

- a) Insertion into an AVL-tree b) Deletion from an AVL-tree

Exercise 12 :

Write a C++ program to implement all the functions of a dictionary (ADT) using hashing.

Exercise 13 :

Write a C++ program for implementing Knuth-Morris- Pratt pattern matching algorithm.

Exercise 14 :

Write a C++ program for implementing Boyer – Moore Patten matching algorithm

Text Books :

1. Data Structures and Algorithms in C++, 3/e, Adam Drozdek, Thomson.
- 2.C++ Programing, 3/e, 2007, D.S. Malik, Thomson, Cengage india Pvt. Ltd. Canada.

SREENIVASA INSTITUTE OF TECHNOLOGY AND MANAGEMENT STUDIES

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II YEAR B.TECH -I SEM (CSE)

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13EEC 217 ELECTRICAL AND ELECTRONIC LAB (Common to CSE and IT)

ELECTRICAL LAB

- 1.Verification of Superposition theorem.
- 2.Verification of Thevinins theorem.
- 3.Magnetization Characteristics of D.C Shunt generator Determination of Critical field resistance.
- 4.Swinburne's Test of DC Shunt machine.
- 5.Brake test on DC shunt motor. Determination of performance characteristics.
- 6.OC & SC tests on Single- phase transformer.

ELECTRONIC LAB

PART-A: ELECTRONIC WORKSHOP PRACTICE

1. Identification, Specification, Testing of R, L, C components (color codes), Potentiometers, Switches (SPDT, DPDT, AND DIP), Coils, Gang condensers, Relays, Bread boards
2. Identification, Specification, Testing of active devices, diodes, BJTs, Low power JFETs, MOSFETs.
3. Study and operation of
 - * Multimeters
 - * Function Generators
 - * Regulated Power Supplies
 - * CRO

PART-B: LABORATORY EXPERIMENTS (MINIMUM OF 10 EXPERIMENTS)

1. PN junction diode characteristics- Forward and Reverse bias
2. Zener diode characteristics
3. Transistor CB characteristics (input and output) and determine h- parameters from graphs
4. Transistor CE characteristics (input and output) and determine h- parameters from graphs
5. Transistor CC characteristics (input and output) and determine h- parameters from graphs
6. Half wave rectifier with and without filter
7. Full wave rectifier with and without filter
8. FET characteristics
9. Frequency response of CE amplifier
10. Frequency response of CC amplifier
11. Frequency response of Common Source FET amplifier
12. Single stage RC coupled amplifier

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II B. TECH II-SEMESTER(CSE)

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13HAS 213 ENVIRONMENTAL SCIENCE (Common to all Branches)

UNIT – 1: Introduction to Environmental Science and Natural Resources

Introduction: Definition - Scope and importance of environment - Need for public awareness - Natural Resources: Forest resources: Use and over-exploitation - Deforestation - Conservation of forests.

Water resources: Use and over-utilization of surface and ground water - Floods and drought - Conflicts over water.

Mineral resources: Use and exploitation - Environmental effects of extracting mineral resources - Case studies.

Food resources: World food problems - Effects of modern agriculture - Fertilizer and pesticide effects - Water logging - Salinity - Case studies.

Energy resources: Conventional energy resources - Coal - Petroleum - Natural gas and Nuclear fuels - Non-conventional energy resources - Solar energy - Wind energy - Tidal energy - Geothermal energy and Biogas energy - Use of alternate energy sources - Case studies.

UNIT – 2: Ecosystem and Biodiversity

Ecosystem: Concept of an ecosystem - Structure and function of an ecosystem - Producers - Consumers and decomposers - Energy flow in the ecosystem - Ecological succession - Food chains - Food webs - Ecological pyramids - Introduction - Types - Characteristic features - Structure and function of the (a) Forest ecosystem (b) Grassland ecosystem (c) Desert ecosystem (d) Aquatic ecosystems (Ponds - Streams - Lakes - Rivers - Oceans - Estuaries).

Biodiversity: Introduction to biodiversity - Genetic - Species and Ecosystem diversity - Bio-geographical classification of India - Value of biodiversity: Consumptive value - Productive value - Social value - Ethical value - Aesthetic and Option values - India as a Mega-diversity nation - Hot spots 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 Ex-situ conservation of biodiversity.

UNIT – 3: Pollution and Waste Management

Definition - Causes - Effects - Control measures of pollution.

Air Pollution: Types of pollutants - Their sources and impacts - Air pollution meteorology - Air pollution control - Air quality standards and limits.

Noise Pollution: Impacts of noise - Permissible limits of noise pollution - Measurement of noise - Control of noise pollution.

Solid waste management: Characteristics - Generation - Collection and transportation of solid wastes - Engineered systems for solid waste management (reuse, recycle, energy recovery, treatment and disposal).

Marine Pollution: Pollution due to organic wastes - Control measures.

Soil Pollution: Causes of soil degradation - Excessive use of fertilizers - Problems with pesticide use - Excess salt and water.

UNIT – 4: Social Issues and the Environment

Water conservation measures - Rain water harvesting and water shed management - Resettlement and rehabilitation of people - Its problems and concerns - Case studies - Role of NGO's - Climate change - Global warming - Acid rain - Ozone layer depletion - Nuclear accidents.

Sustainable development: Definition - Objectives - Environmental dimensions of sustainable development - Environmental audit for sustainable development.

UNIT– 5: Environmental Legislation and Human Population

Environmental acts: The water (Prevention and control of pollution) Act - The air (Prevention and control of pollution) act - The wild life (protection) act - The forest conservation act - The environmental protection act.

International conventions: Stockholm conference 1972 - Earth summit 1992 and Copenhagen conference 2009 - Case studies: Chipko movement - Narmada bachao andolan - Silent valley project - Chernobyl nuclear disaster - Ralegaon siddhi (Anna Hazare) and Bhopal gas tragedy

Population growth: Variation among nations - Population explosion - Family welfare programmes - Environment and human health - Human rights - Value education - HIV/AIDS - Women and child welfare - Role of information technology in environment and human health - Case studies.

Field Work

Visit to a local area to document environmental assets: River/ Forest/ Grasslands/ Mountains

Visit to local polluted site: Urban/ Rural/ Industrial/ Agriculture

Study of simple ecosystems: Pond/ River/ Hill slope etc.

Text books:

1. Text book of Environmental Studies, 4/e, 2012, C.P. Kaushik and Anubha Kaushik, New Age International (P) Ltd., Publishers, New Delhi.
2. Text book of Environmental Studies, 1/e, 2008, Erach Bharucha, University Press (India) Private Ltd. Hyderabad.

Reference books:

1. Environmental Studies-From Crisis to Cure, 2/e, 2012, R. Rajagopalan, Oxford University Press , New Delhi.
2. A Text Book of Environmental science and Technology ,1/e, 2008, Dr.M.Anji Reddy, B.S. Publications, Hyderabad.
3. Principles of Environmental Science and Engineering, 1/e, 2005, Keerthinarayana and Daniel Yesudiam, Hi –Tech Publications , Chennai.
4. Glimpses of Environment , 1/e, 2005, Dr. KVSG Murali Krishna, Environmental Protection Society, Kakinada, India.
5. Environmental Studies , 1/e, 2009, Anindita Basak , Pearson Education, New Delhi.

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II B.TECH II – SEMESTER

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13HAS222 PROBABILITY AND STATISTICS (Common to CSE, IT, MEC, CE)

UNIT - 1: Probability and Random variables

Probability: Sample space and events - Probability - The axioms of probability - Some elementary theorems - Conditional probability - Baye's theorem

Random variables: Discrete and continuous distributions - Distribution functions

UNIT - 2: Probability Distributions

Binomial - Poisson and Normal distributions - Related properties

UNIT - 3: Curve fitting

The method of least squares - Interfaces based on the least squares estimations - Curvilinear - Regression - Multiple regression

UNIT - 4: Sampling distribution and Estimation

Sampling distribution: Populations and samples - Sampling distributions of mean (known and unknown) - Proportions - Sums and differences

Estimation: Point estimation - Interval estimation - Bayesian estimation

UNIT - 5: Test of Hypothesis and Test of Significance

Test of Hypothesis: Means - Hypothesis concerning one and two means - Type I and Type II errors - One tail, two-tail tests

Test of Significance: Student's t-test - F-test - Chi-square test of goodness of fit

Text Books:

1. Fundamentals of Mathematical Statistics, 10/e, 2001, S.C. Gupta, V.K. Kapoor, S. Chand and Company Publishers, New Delhi.
2. Probability and Statistics, 2012, T.K.V. Iyengar, B. Krishna Gandhi, S. Ranganatham and M.V.S.S.N. Prasad, S. Chand and Company Publishers, New Delhi.

Reference Books:

1. Probability and Statistics, 2011, V. Ravindranath, T.S.R. Murthy, I.K. International Pvt. Ltd, New Delhi.
2. Probability and Statistics for Engineers, 6/e, 2006, Johnson A. Richard, Miler & Friends, Pearson Education, New Delhi.
3. Probability and Statistics, 2012, E. Rukmangadachari, E. Keshava Reddy, Pearson Education, New Delhi.

4. Probability and Statistics for Engineers, 2011, Dr. J. Ravichandran, Wiley-India Publishers, New Delhi.
5. Probability and Statistics for Engineers and Scientists, 7/e, 2002, Ronald E. Walpole, Raymond H. Myers, Sharon L. Myers, Keying Ye, Pearson Education Asia, New Delhi.

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II B. TECH II-SEMESTER (CSE)

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13CSE 221 DIGITAL LOGIC DESIGN AND COMPUTER ORGANIZATION

(Common to CSE, IT)

UNIT - 1: Digital Logic Circuits

Digital computers - Logic gates - Boolean algebra - Map simplification - Combinational circuits - Flip-Flops - Sequential circuits

Digital Components: Integrated circuits - Decoders - Multiplexers - Registers - Shift registers - Binary counters - Memory unit

Basic structure of computers: Computer Types - Basic operational concepts - Bus structures - Software - Performance

UNIT - 2: Data Representation

Data types - Complements - Fixed Point Representation - Floating Point Representation

Register Transfer Language and Microoperations: Register Transfer language - Register Transfer - Bus and memory transfers - Arithmetic Microoperations - Logic micro operations - Shift micro operations - Arithmetic logic shift unit

Stack Organization - Instruction formats - Addressing modes - Data Transfer and manipulation - Program control - RISC(Reduced Instruction Set Computer)

UNIT - 3: BASIC COMPUTER ORGANIZATION AND DESIGN

Instruction codes - Computer Registers - Computer instructions - Instruction cycle – Memory - Reference Instructions - Input – Output and Interrupt

Micro Programmed Control: Control memory - Address sequencing - Microprogram example - Design of control unit Hard wired control - Microprogrammed control

UNIT - 4: COMPUTER ARITHMETIC

Addition and subtraction - Multiplication Algorithms - Division Algorithms - Floating – point Arithmetic operations - Decimal Arithmetic unit - Decimal Arithmetic operations.

The Memory System: Basic concepts semiconductor RAM memories - Read-only memories - Cache memories - Performance considerations.

UNIT - 5: INPUT-OUTPUT ORGANIZATION

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

Pipeline and Vector Processing: Parallel Processing - Pipelining - Arithmetic Pipeline - Instruction Pipeline - RISC pipelining - Vector Processing.

Text Books:

1. Computer Organization , 5/e , Carl Hamacher - Zvonks Vranesic - SafeaZaky , Tata McGraw Hill , International edition 2002.
2. Computer System Architecture , 3/e , M.Moris Mano , Pearson/Prentice Hall Inc , 1998.

Reference Books:

1. Computer Organization and Architecture , 6/e , William Stallings , Pearson/PrenticeHall Inc , 2003.
2. Fundamentals or Computer Organization and Design , Sivaraama Dandamudi Springer Int. Edition , 2006.
3. Computer Architecture a quantitative approach , 4/e , John L. Hennessy and David A. Patterson - Elsevier , India, 2004.
4. Digital Design and Computer Architecture, 2/e, David Harris and Sarah Harris, Morgan Kaufmann, 2007.
5. Computer Architecture and Organization – An Integrated Approach, 2/e, Miles J. Murdocca and Vincent P. Heuring, Wiley, 2007.

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II B. TECH II-SEMESTER(CSE)

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13CSE 222 OBJECT ORIENTED PROGRAMMING THROUGH JAVA

(Common to CSE, IT)

UNIT - 1: Object Oriented Thinking

Need for oop paradigm - A way of viewing java world - Classes and instances - Class hierarchies (Inheritance) - Method binding - overriding and exceptions - Byte code - Java virtual machine - JDK software

History of Java: Java buzzwords - Data types - Variables - Arrays - Operators - Control statements - Concepts of classes - Objects - Methods - Constructors - this keyword - Garbage collection - Overloading methods and constructors - Argument passing - Recursion - Access control - String handling

UNIT – 2: Inheritance and Packages

Inheritance Basics - Base class object - Subclass - Subtype - Substitutability - Forms of inheritance - Benefits of inheritance - Costs of inheritance - Member access rules - Super uses - Using final with inheritance - Polymorphism - Method overriding - Abstract classes

Packages : Defining a package - Finding packages and classpath - Importing packages - Exploring packages - Java.io - Java.util.

UNIT - 3: Interfaces and Exception Handling

Defining an interface - Implementing interface - Applying interfaces - Variables in interface and extending interfaces - Exception handling fundamentals – Exception types – Uncaught exceptions - Usage of try - Catch - Throw - Throws and Finally - Built in exceptions - Creating own exception sub classes – Chained exceptions

UNIT – 4: Multithreading and Event Handling

The java Thread model – The main Thread - Creating a Thread – Creating multiple threads – Thread priorities - synchronization

The delegation event model - Handling mouse and keyboard events - Event classes – Event listener interfaces - Adapter classes - Inner classes - The AWT class hierarchy - User interface components - Labels - Button - Canvas - Scrollbars - Text components - Check box - Check box groups - Dialog boxes - Menubar - Graphics - Layout managers - Understanding layout managers

UNIT - 5: Applets

Concepts of Applets – Applet basics - Differences between applets and applications – Applet skeleton - Types of applets - The HTML APPLET tag - Passing parameters to applets

Swing – The origins of swing – Two key swing features - MVC connection - Components - Containers – Create a swing applet - Exploring swing - JFrame and JComponent - Icons And Labels - Text fields - Buttons - The JButton class - Check boxes - Radio buttons - Combo boxes - Tabbed panes - Scroll panes - Trees - Tables

Text Books:

1. “Java,the complete reference” , 7/e , 2008 , Herbert schildt ,Tata McGraw Hill.
2. “Understanding OOP with Java” , updated edition , 2009, T. Budd , pearson eduction.

Reference Books:

1. “Introduction to Java Programming”, 6/e, 2006, Y. Daniel Liang, Pearson Education.
2. “An Introduction to Java Programming and Object Oriented Application Development”, 1/e, 2009, R.A. Johnson, Thomson.
3. “Core Java 2, Vol 1- Fundamentals”, 8/e, 2012, Cay.S. Horstmann and Gary Cornell, Pearson Education.
4. “Core Java 2, Vol 2 - Advanced Features”, 8/e, 2012, Cay.S. Horstmann and Gary Cornell, Pearson Education.
5. “Java and Object Orientation - An Introduction”, 2/e, 2002, John Hunt, Springer.

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II B. TECH II-SEMESTER(CSE)

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13CSE 223 DATABASE MANAGEMENT SYSTEMS (Common to CSE, IT)

UNIT - 1: Database Systems and Entity Relationship Modeling

Database system applications - Purpose of database systems - View of data - Database languages - Database users and administrators - Database architecture - The Entity-Relationship model - Attributes and entity sets - Relationship sets - Entity-Relationship diagrams - Extended E-R features.

UNIT - 2: Relational Data Model and Language

Introduction to the relational model - Integrity constraints - Fundamental relational algebra operations - Tuple relational calculus - Domain relational calculus.

UNIT - 3: Introduction to SQL

Characteristics of SQL - Advantages of SQL - SQL data types and literals. Types of SQL commands - SQL operators and their procedures - Form of Basic SQL Query - Examples of Basic SQL Queries - Introduction to Nested Queries - Views - Indexes - SQL functions - Joins - Set operators in SQL - Database triggers - Cursors in SQL - PL/SQL

UNIT - 4: Normalization

Introduction to schema refinement - Properties of decompositions - Functional dependencies - Reasoning about functional dependencies - Normal forms - First - Second - Third – BCNF - MVD - Fourth Normal Form.

UNIT - 5: Transaction Processing Concepts and Concurrency Control Techniques

Transaction concept - Transaction state - Implementation of atomicity and durability - Serializability - Recoverability - Concurrent executions - Lock-Based Protocols for concurrency control - Time stamp-based protocol for concurrency control - Multiple granularity.

Text Books:

1. Database System Concepts, 5/e, 2006, Korth, Silberschatz, Sudarshan, Tata McGrawHill, New York.
2. Database Management System, 2/e, 2000, RaghuRamakrishnan, Tata McGrawHill, New York.

Reference Books:

1. Fundamentals of Database Systems, 5/e, 2008, Elmasri, Navathe, Pearson Education, USA.
2. Database Management Systems , 5/e, 2003, Peter Rob, A.Ananda Rao and Carlos Coronel, Cengage Learning, USA.
3. SQL, PL/SQL Programming, 2/e, 2011, Ivan Bayross, BPB Publications, New Delhi, India.
4. Introduction to Database Systems, 8/e, 2004, C.J.Date, Pearson Education, USA.
5. Fundamentals Of Database Management Systems, 1/e, 2006, M.L. Gillenson, Wiley, New Delhi, India.

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II B. TECH II-SEMESTER(CSE)

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13CSE 224 DESIGN AND ANALYSIS OF ALGORITHMS (Common to CSE, IT)

UNIT - 1: Introduction

Algorithm - Psuedo 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 and Biconnected components

UNIT - 2: Divide and Conquer

General method and applications - Binary search - Quick sort - Merge sort - Strassen's matrix multiplication

Greedy Method: General method and applications - Job sequencing with dead lines - 0/1 knapsack problem - Minimum cost spanning trees - Single source shortest path problem

UNIT - 3: Dynamic Programming

General method and applications - Matrix chain multiplication - Optimal binary search trees - 0/1 knapsack problem - All pairs shortest path problem - Travelling sales person problem - Reliability design problem

UNIT - 4: Backtracking

General method and applications - N-queens problem - Sum of subsets - Graph coloring - Hamiltonian cycles

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

UNIT - 5: Np-Hard and Np-Complete Problems

Basic concepts - Non deterministic algorithms – The classes NP hard and NP complete - Cook's theorem

Text Books:

1. "Fundamentals of Computer Algorithms", 2/e , 2008, Ellis Horowitz , Satraj Sahni and Rajasekharam , Galgotia publications pvt. Ltd , Universities press
2. "Introduction to Algorithms", 2/e , 2005, T.H.Cormen - C.E.Leiserson - R.L.Rivest and C.Stein , Prentice Hall Inc. Pvt. Ltd./ Pearson Education

Reference Books:

1. "Introduction to Design and Analysis of Algorithms A strategic approach", 1/e, 2005, R.C.T.Lee - S.S.Tseng - R.C.Chang and T.Tsai , Mc Graw Hill.
2. "Data structures and Algorithm Analysis in C++", 2/e, 2006, Allen Weiss , Pearson education.
3. "Design and Analysis of algorithms", 8/e, 2005, Aho , Ullman and Hopcroft , Pearson education.
4. "Algorithms" , 9/e, 2004, Richard Johnson baugh and Marcus Schaefer , Pearson Education.
5. "Algorithm Design , Foundations , Analysis and Internet examples", 1/e, 2002, M.T.Goodrich and R.Tomassia , John wiley and sons.

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II B. TECH II-SEMESTER(CSE)

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13CSE 225 OBJECT ORIENTED PROGRAMMING LAB (Common to CSE, IT)

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

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
- JDK Kit. Recommended

Week1 :

a) Write a Java program that prints all real solutions to the quadratic equation $ax^2 + bx + c = 0$. Read in a, b, c and use the quadratic formula. If the discriminant $b^2 - 4ac$ is negative, display a message stating that there are no real solutions.

b) The Fibonacci sequence is defined by the following rule:

The first two values in the sequence are 1 and 1. Every subsequent value is the sum of the two values preceding it. Write a Java program that uses both recursive and non recursive functions to print the nth value in the Fibonacci sequence.

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 multiply two given 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: MADAM 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

b) write a java program for multilevel inheritance?

Week 6:

a) Write a java program to create an abstract class named Shape that contains an empty method named numberOfSides (). Provide three classes named Trapezoid, Triangle and Hexagon such that each one of the classes extends the class Shape. Each one of the classes contains only the method numberOfSides () that shows the number of sides in the given geometrical figures.

b) Write a java program which includes class , abstract class and interface?

c) Write a java program for creation of user defined package and accessing the members present in package.

Week 7 :

a) write a java program for checked and unchecked exceptions?

b) Write a program that reads two numbers from the user to perform integer division into Num1 and Num2 variables. The division of Num1 and Num2 is displayed if they are integers. If Num1 or Num2 were not an integer, the program would throw a NumberFormatException. If Num2 were Zero, the program would throw an ArithmeticException.

Week 8:

a) Write a Java program that creates three threads. First thread displays “Good Morning” every one second, the second thread displays “Hello” every two seconds and the third thread displays “Welcome” every three seconds.

b) Write a Java program that correctly implements producer consumer problem using the concept of inter thread communication.

Week 9 :

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 10 :

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 11:

a) Write a Java program for handling mouse events.

- b) Write a java program for handling keyboard events.

Week 12 :

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 NumberFormatException. If Num2 were Zero, the program would throw an ArithmeticException Display the exception in a message dialog box.

Week 13 :

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.

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

Text Books :

1. Java How to Program, Sixth Edition, H.M.Dietel and P.J.Dietel, Pearson Education/Prentice Hall Inc
2. Introduction to Java programming, Sixth edition, Y.Daniel Liang, Pearson Education
3. Big Java, 2nd edition, Cay Horstmann, Wiley Student Edition, Wiley India Private Limited.

II B. TECH II-SEMESTER(CSE)

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13CSE 226 DATA BASE MANAGEMENT SYSTEMS LAB (Common to CSE, IT)

OBJECTIVE

To teach students database handling - data manipulation and data processing skills through SQL & PL/SQL - this will help them to develop data centric computer applications.

The following topics need to be covered in the Laboratory Sessions:

- **SQL**

- Introduction of SQL

- DDL - DML Commands

- Basic Data Types

- Commands to create table

- Constraint definition

- Commands for table handling

- Alter table - Drop table

- Insert - Update - Delete Commands for Record Handling

- Select with operators like arithmetic - comparison - logical Query

- Expression operators

- Ordering the records with order by, grouping the records

- SQL functions:**

- Date - Numeric - Character - Conversion Functions

- Group functions: avg - max - min - sum - count

- Set operations:** Union - Union all - intersect - minus

- Join concept:** Simple - equi - nonequi - self - outer join

- Query & subqueries

- View Introduction - create - update - and drop commands

- **PL/SQL**

- Advantages of PL/SQL

Support of SQL

Executing PL/SQL

PL/SQL character set & DataTypes

Character - row - rowed - Boolean - binary integer - number Variable - constant

PL/SQL blocks Attribute

% TYPE - % ROWTYPE - operators - function comparison numeric - character - date

Controlstructures

- o Condition-if
- o Interactive-loop - for - while
- o Sequential-go to.

- **DATABASE TRIGGERS**
Definition - syntax - parts of triggers
Types of triggers - enabling&disabling triggers
- **Cursors - Procedures and Functions**
Definition & Implementation

Note: The faculty members are instructed to provide the necessary excercises which covers the above topics.

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III B. TECH I-SEMESTER (CSE)

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13CSE 311

COMPUTER NETWORKS

UNIT – 1: Introduction, Physical Layer and Data Link Layer

Network Hardware - Network software - References models - Guided transmission media - Communication satellites - The public switched telephone network – Switching - Data link layer design issues - Elementary data link protocols - Sliding window protocols

UNIT – 2: The Medium Access Control Sublayer

The channel allocation problem - Multiple access protocols - Ethernet- Ethernet cabling - Manchester encoding - The ethernet MAC sub layer protocol - The binary exponential back off algorithm - Ethernet performance - Switched ethernet - Fast Ethernet - Wireless LANS - The 802.11 protocol stack - The 802.11 physical layer – The 802.11 MAC sub layer protocol - The 802.11 frame structure

UNIT - 3: The Network Layer

Network layer design issues - Routing algorithms – Congestion control algorithms – Internet working - The network layer in the internet

UNIT - 4: The Transport Layer

The transport service - Elements of transport protocols - The internet transport protocols: UDP - The internet transport protocols: TCP

UNIT – 5: The Application Layer

DNS-The domain name system - Electronic mail. The world wide web – Multimedia

Text Books:

1. “Computer Networks”, 4/e, 2008, Andrew S. Tanenbaum, Pearson Education, New Jersey.
2. “Data Communications and Networking”, 4/e, 2006, Behrouz A. Forouzan, Tata McGraw Hill, New Delhi.

Reference Books:

1. “Computer Communications and Networking Technologies”,1/e, 2001, Michael A.Gallo, William M. Hancock, Cengage Learning, New Delhi.
2. “Computer Networks: Principles”, Technologies and Protocols for Network Design,1/e, 2006, Natalia Olifer, Victor Olifer, Wiley India, New Jersey.
3. “Computer and Communication Network”,1/e, 2007, Nader F. Mir, Pearson Education, New Jersey.
4. “Computer Networking: A Top-Down Approach Featuring the Internet”, 3/e, 2005, James F.Kurose - K.W.Ross, Pearson Education, New Jersey.
5. “Data and Computer Communications”,1/e, 2001, G.S.Hura and M.Singhal, CRC Press, Taylor and Francis Group, FL United States.

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III B. TECH I-SEMESTER (CSE)

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13CSE 312 OPERATING SYSTEMS (Common to CSE, IT)

UNIT - 1: Operating Systems Overview

Goals – Operations of OS – OS and the computer system – Efficiency, system performance and user convenience – classes of operating systems – Batch processing systems – Multi programming systems – Time sharing systems – Real time operating systems – Distributed operating systems – Modern operating systems

UNIT - 2: Process Management

Process Concepts – Process scheduling - Scheduling criteria - Scheduling algorithms - FCFS - SJF - Priority - RR - Multilevel queue - Multilevel feedback queue - Their evaluation – Multi processor scheduling - Thread scheduling

UNIT - 3: Concurrency and Principles of Deadlock

Process Synchronization - The critical section problem - Peterson's solution - Synchronization hardware - Semaphores - Classic problems of synchronization - Monitors
Principles of Deadlock: System model - Deadlock characterization - Deadlock prevention - Deadlock avoidance and detection - Recovery from deadlock

UNIT – 4: Memory Management and Mass Storage Structure

Swapping - Contiguous Memory Allocation - Paging - Structure of the page table - Segmentation - Virtual memory - Demand paging - Page replacement algorithms
Mass Storage Structure: Overview of mass-storage structure - Disk structure - Disk scheduling - Swap space management - RAID structure

UNIT – 5: File System Interface, Protection and Security

File concept - Access methods - Directory structure - File system mounting - File sharing - Protection - File system structure - File system implementation - Directory implementation - Allocation methods - Free space management

Protection & Security: Goals of protection - Principles of protection - The security problem - Program threats - System and network threats

Text Books:

1. Operating System Concepts, 7/e, 2004 Abraham Silberchatz and Peter B.Galvin Greg Gagne,John Wiley student edition, New Delhi.
2. Operating Systems-A Concept based Approach, 2/e, 2006, D.M.Dhamdhere,Tata McGraw Hill , New Delhi.

Reference Books:

1. Operating Systems: Internals and Design Principles, 6/e, 2009, Stallings, Pearson Education.
2. Modern Operating Systems, 2/e, 2001, Andrew S Tanenbaum, Prentice Hall.
3. Principles of Operating Systems, 1/e, 2009, B.L. Stuart, Cengage learning, India Edition.
4. Operating Systems, 2/e, 2005, A.S. Godbole, Tata McGraw-Hill Education.
5. An Introduction to Operating Systems, 2/e, 2008, P.C.P. Bhatt, Prentice Hall.
6. Operating Systems, 3/e, 2004, G. Nutt, N. Chaki and S. Neogy, Pearson Education.
7. Operating Systems, 1/e, 2010, R. Elmasri, A.G. Carrick and D. Levine, Mc Graw Hill.

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III B. TECH I-SEMESTER(CSE)

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13CSE 313 SOFTWARE ENGINEERING (Common to CSE, IT)

UNIT – 1: Introduction to Software Engineering and Process Models

The evolving role of software - Changing nature of software - Legacy software - Software myths - A generic view of process - Software engineering a layered technology - A process framework - The Capability Maturity Model Integration (CMMI) - Process patterns - Process assessment - Personal and team process models

Process Models: The waterfall model - Incremental process models - Evolutionary process models - Specialized process models - The unified process

UNIT - 2: Software Requirements

Functional and non-functional requirements - User requirements - System requirements - Interface specification - The software requirements document

Requirements Engineering Process: Feasibility studies - Requirements elicitation and analysis - Requirements validation - Requirements management - System models - Context models - Behavioral models - Data models - Object models - Structured methods

UNIT - 3: Design Engineering

Design process and design quality - Design concepts - The design model - Pattern based software design - Creating an architectural design - Software architecture - Data design - Architectural styles and patterns - Architectural design

Modeling Component-Level Design: Designing class based components - Conducting component level design - Object constraint language - Designing conventional components

UNIT - 4: Testing Strategies

A strategic approach to software testing - Test strategies for conventional software - Validation testing - System testing - The art of debugging - Black box and white box testing

Product metrics: Software quality - Frame work for product metrics - Metrics for analysis model - Metrics for design model - Metrics for source code - Metrics for testing - Metrics for maintenance

UNIT - 5: Metrics for Process and Products

Software measurement - Metrics for software quality - Risk management: reactive Vs proactive risk strategies - Software risks - Risk identification - Risk projection - Risk refinement - RMMM - RMMM plan

Quality Management: Quality concepts - Software quality assurance - Software reviews - Formal technical reviews - Statistical software quality assurance - Software reliability - The ISO 9000 quality standards

Text Books:

1. Software Engineering , A practitioner's Approach , 6/e , 2005, Roger S Pressman ,Tata McGrawHill International Edition.
2. Software Engineering , 7/e , 2004, Ian Sommerville , Pearson Education.

Reference Books:

1. Fundamentals of Software Engineering , 2/e, 2005, Rajib Mall , Prentice Hall Inc.
2. Software Engineering: A Precise Approach , 1/e, 2010, Pankaj Jalote , Wiley India.
3. Software Engineering: A Primer , 1/e, 2008, Waman S Jawadekar - Tata McGraw Hill.
4. Software Engineering - Principles and Practices ,1/e, Deepak Jain , Oxford University Press.
5. Software Engineering – A Supporting Processes, 1/e, 2005, Richard H. Thayer and Merlin Dorfman, Wiley.

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III B. TECH I-SEMESTER(CSE)

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13CSE 314 PRINCIPLES OF PROGRAMMING LANGUAGES

(Common to CSE, IT)

UNIT - 1: 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

UNIT - 2: Describing Syntax and Semantics, Names, Bindings, Type Checking, and Scopes

Introduction - General problem of describing syntax - Formal methods of describing syntax - Attribute grammars – Describing the meanings of programs - Names - Variables – The concept of binding - Type checking - Strong typing - Type compatibility – Scope - Scope and life time - Referencing environments - Named constants

UNIT - 3: Data Types, Expressions, Assignment Statements, Control Structures

Introduction - Primitive data types - Character string types - User defined ordinal types - Array types - Arithmetic expressions - Overloaded operators - Type conversions - Relational and boolean expressions - Short circuit evaluation - Assignment statements - Mixed mode assignment - Selection statements - Iterative statements - Unconditional branching - Guarded commands

UNIT - 4: Subprograms, Abstract Data Types and Encapsulation Constructs

Introduction - Fundamentals of subprograms - Design issues for subprograms - Local referencing environments - Parameter passing methods - Parameters that are subprogram names - Overloaded subprograms - Generic subprograms - Design issues for functions - User defined overloaded operators – Coroutines - The concept of abstraction - Introduction to data abstraction - Design issues for abstract data types - Language examples - Parameterized abstract data types - Encapsulation constructs - Naming encapsulations

UNIT -5: Concurrency, Case Study:Java

Why concurrency – Programs and processes – Problems with concurrency – Process interactions – Concurrency primitives – Concurrent control abstractions – Object oriented programing – Key concepts – Pragmatics – Case study: Java

Text Books:

1. Concepts of Programming Languages, 8/e , Robert W. Sebesta, Pearson Education, 2008.
2. Programming Language Design Concepts, 1/e, D. A. Watt, Wiley Dreamtech, rp - 2007.

Reference Books:

1. Programming Languages, 2/e, A.B. Tucker, R.E. Noonan, Tata McGraw Hill, 2002.
2. Programming Languages, 2/e, K. C. Loudon, Thomson, 2003.
3. LISP, 3/e, Patric Henry Winston and Paul Horn, Pearson Education, 2000.
4. Programming in Prolog, 5/e, W.F. Clocksin and C.S. Mellish, Springer, 2001.
5. Programming Python, 3/e, M. Lutz and O'Reilly, SPD, rp - 2007.
6. Core Python Programming, 3/e, Chun, Pearson Education, 2007.
7. Guide to Programming with Python, 2/e, Michael Dawson, Thomson, 2008.

(Autonomous)

III B. TECH I-SEMESTER(CSE)

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13ECE 323

MICROPROCESSORS AND INTERFACING

(Common to ECE, EEE, EIE, CSE, IT)

UNIT - 1: Introduction to 8085 Microprocessor

Architecture of 8085 microprocessor - The 8085 programming model - Pin diagram of 8085 -Machine cycle status and control signals- Addressing modes- Instruction classification- Instruction format- Simple programs involving logical- Branch and call instructions

UNIT - 2: Introduction To 8086 Microprocessor

Architecture of 8086 microprocessor - Special functions of general purpose register - 8086 flag register and function of 8086 flags - Addressing modes of 8086 - Instruction set of 8086 - Assembler directives - simple programs – procedures - and macros

UNIT - 3: Assembly Language Programming & Timing Diagrams

Assembly language programs involving logical - Branch & call instructions – Sorting - Evaluation of arithmetic expressions - String manipulation - Pin diagram of 8086 - Minimum mode and maximum mode of operation - Timing diagram - Memory interfacing to 8086 (static RAM, EPROM) - Need for DMA - Interfacing with 8237/8257

UNIT - 4: Programmable Interfacing Devices & Interrupt Structure

8255 PPI – Various modes of operation and interfacing to 8086 - Interfacing keyboard – Displays – 8279 - Stepper motor - D/A And A/D converter interfacing - Interrupt structure of 8086- Vector interrupt table- Interrupt service routines- Introduction to Dos and Bios interrupts- 8259 PIC architecture and interfacing and its importance

UNIT - 5: Serial Data Transfer Schemes

Serial data transfer schemes - Asynchronous and synchronous data transfer schemes - 8251 USART architecture and interfacing - TTL to RS 232C and RS232C to TTL conversion - Sample program of serialdata transfer - Introduction to high-speed serial communications standards – USB features of advanced microprocessors(80286,80386, Pentium) - features of 8051 microcontroller

Text books :

1. Advanced microprocessor and Peripherals ,2nd edition,2000,A,K,Ray and K,M,Bhurchandi, Tata McGraw-Hill, , New Delhi.
2. Microprocessor architecture, programming and applications with 8085/8080A 2nd edition,1996, Ramesh S,Goankar, New age international Publishers, New Delhi.

Reference books:

1. Micro Processors & Interfacing , revised 2nd edition,2007, Douglas U, Hall ,TMH, New Delhi
2. The 8088 and 8086 microprocessors, 1st edition,2003, Walter A,Triebel, Avtar Singh, PHI,,New Delhi.
3. Micro Computer System 8086/8088 Family Architecture, Programming and Design 2/e,2000, By Liu and GA Gibson, PHI,New Delhi.
4. The X8086 microprocessor architecture, programming and interfacing, 1/e,2010, Das,pearson education india limited, New Delhi
5. The 8086 microprocessor programming and interafacing, 1/e ,2007, Kenneth J,Ayala, Cenange learning private limited, New Delhi.

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III B. TECH I-SEMESTER(CSE)

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13CSE 315 COMPUTER NETWORKS AND OPERATING SYSTEMS LAB

Objective:

- To Understand the functionalities of various layers of OSI model
- To understand the operating System functionalities

System/ Software Requirement

- Intel based desktop PCs LAN CONNECTED with minimum of 166 MHZ or faster processor with atleast 64 MB RAM and 100 MB free disk space

Part - A

1. Implement the data link layer framing methods such as character, character stuffing and bit stuffing.
2. Implement on a data set of characters the three CRC polynomials – CRC 12, CRC 16 and CRC CCIP.
3. Implement Dijkstra's algorithm to compute the Shortest path thru a graph.
4. Take an example subnet graph with weights indicating delay between nodes. Now obtain Routing table at each node using distance vector routing algorithm.
5. Implement Link state routing algorithm to find the shortest distance using link state packets.
6. Take an example subnet of hosts . Obtain broadcast tree for it.

Part -B

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

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13MBA 318 SOFT SKILLS LAB

The objective of soft skill lab is to enhance the knowledge of the students to improve their employability and career opportunities.

1. Just a Minute (JAM): Introduction – Activity Types – Time Management – Rules and Procedure Style – Confidence Building – Goals – Practice Activity.

2. Debates and Role play: Debates – Introduction, Importance of Team Line, and Different formats of Debates, judging the debate, Qualities of good debates; **Role Play** – Introduction – Features - Simulations - Role Play Vs Dramas – Aims – Practice Activities.

3. Seminars with PPTs: Introduction – Collection of Data – Planning Preparation – Type Style and Format – Use of Props – Attracting Audience – Voice Modulation – Clarity – Body Language and Asking Queries.

4. Team Building and Creativity: Team Building – Introduction - Meaning – Definition of Team – Difference between Team and Group – Factors of Team Building – Key roles – Impact of Team Building - Challenges and its overview. **Creativity**- Introduction - Meaning – Definition - Importance of Creativity and its Quality – Basic Ideas of improve Creativity – Techniques and Tolls – Creativity thinking skills – Barriers to Creativity – Overview.

5. Resume Preparation: Introduction – Necessity – Difference between Resume and Curriculum vitae – Types of Resume Writing – Tools and Techniques – Preparation of Effective Resume writing.

6. Group Discussion: Introduction – Types – Guidelines to Group Discussion - Group Discussion Topics – Do’s and Dont’s of Group Discussion – Practical Group Discussion Sessions.

7. Interview Skills: Interviews – Types of Interviews – Guide lines for Interview – Tips to attend an Interview – Do’s and Dont’s – Before, During and after on Interview – Mock Interviews.

8. Mock Interviews: Advancement in Conducting and Organizing Practical G.D. Sessions – Practical HR Interviews with Specialized Faculty.

Reference Books:

1. Lalithambigai, N. (2003). “Communication Skills: What Do Employers’ Expect?”
2. Variyar, Sharath Kumar, “Soft skills Crucial in Global Engineering Services”,

3. Kaye Thorne,(2005) “Coaching for Change: Practical Strategies for transforming Performance”,
4. V. Murali Krishna and S. Sujana,(2010) “Personality Development”,
5. S. Sujana, A. Swetha and A. Santoshi Roopa,(2010) “Interpersonal Skills and Team Building”,
6. Michael West(1996),” Effective Team Work”,
7. Parul Singh,(2007) “Writing Effective Resume For Job Applications”,
8. Kerry Shephard,(2005) “At Conferences, Seminars and Meetings”.

III B. Tech. II-Semester

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13CSE 321 THEORY OF COMPUTATION

UNIT – 1: Fundamentals and Finite Automata

Strings - Alphabets and languages - Finite state automata – Basic Definitions - Deterministic finite automata – Non deterministic finite automata - Equivalence of DFA’s and NFA’s - Finite automata with output – More machines and mealy machines - Minimization of FA - Equivalence between two FA’s - NFA with ϵ –moves - Equivalence of NFA’s with and without ϵ –Moves

UNIT – 2: Regular Expressions and Regular sets

Regular expressions – Regular languages - Identity rules for regular expressions – Equivalence of finite automata and regular expressions – Pumping lemma for regular sets – Applications of the Pumping lemma - Closure proportions of regular sets (Without proof)

UNIT – 3: Regular Grammars and Context Free Grammars

Regular grammars – Right Linear and Left Linear grammars - Equivalence of regular grammar and Finite Automata - Context free Grammars - Motivation and introduction - Definition derivations - Leftmost derivation - Rightmost derivation - Derivation tree - Ambiguity simplification of CFG’s - Chomsky Normal Form - Greibach Normal Form

UNIT – 4: Push Down Automata

Definitions - Model of PDA – Acceptance by PDA - Design of PDA - Equivalence of PDA’s and CFL’s - Deterministic PDA - Closure properties of CFL (Without proof)

UNIT – 5: Turing Machine

Definition - Model - Language acceptance - Design of Turing Machine - Computable languages and functions - Modifications of Turing machine - Church’s hypothesis - Restricted Turing Machines equivalent to the basic model - Chomsky hierarchy of languages - Grammars and their machine recognizers

Text Book:

1. “Introduction to Automata theory languages and Computation”, 3/e, 2006, Hopcroft H.E. and Ullman Jeffrey.D., Pearson Education, New Delhi, India.
2. “Theory of computer Science”, 2/e, 2007, Mishra and Chandrasekaran, PHI, New Delhi, India.

Reference Books:

1. “Introduction to Theory of Computation”, 2/e, 2005, Sipser, Thomson, Australia.
2. “Introduction to Languages and Theory of Computation”, 1/e, 2009, John C Martin, Tata McGraw Hill Education, Hyderabad, India.
3. “Introduction to Computer Theory”, 2/e, 1997, Daniel I.A. Cohen, John Wiley, India.
4. “Theory of computation”, 1/e, 2012, George Turlakis, John Wiley, India.
5. “Theory of Computation” 1/e, 2006, Dexter C. Kozen, Springer, India.

SREENIVASA INSTITUTE OF TECHNOLOGY AND MANAGEMENT STUDIES

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III B. Tech II-Semester

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13CSE 322 OBJECT ORIENTED ANALYSIS AND DESIGN (Common to CSE, IT)

UNIT – 1: Introduction to UML

The meaning of object orientation – Encapsulation - Information hiding - Object identity – Inheritance - Polymorphism - Genericity - Importance of modeling - Principles of modeling - Object oriented modeling - Conceptual model of the UML – Architecture - Software Development Life Cycle

UNIT – 2: Basic Structural Modeling

Classes - Relationships - Common mechanisms - Diagrams – Class diagrams - Terms and Concepts – Common modeling techniques for class & object diagrams

UNIT – 3: Collaboration and Sequence Diagrams

Depicting a message - Polymorphism in collaboration diagram - Iterated messages - Use of self in messages – Depicting an asynchronous message - Callback mechanism - asynchronous messages with priority – Depicting a broadcast messages

UNIT – 4: Behavioral and Architectural Modeling

Interactions - Use cases - Use case diagrams – Interaction diagrams - Activity diagrams - Events and signals - State machines - Processes and Threads - Time and space - State chart diagrams - Component - Deployment - Component diagrams - Deployment diagrams

UNIT – 5: Advanced Topics

Type conformance and closed behavior: The class versus type – The principle of type conformance – The principle of closed behavior

The Perils of inheritance and polymorphism: Abuses of inheritance – The danger of polymorphism

Techniques for organizing operations: Mix-in classes - Ring of operations

Text Books:

1. “The Unified Modelling Language User Guide”, 2/e, 2005, Grady Booch, James Rumbaugh and Ivar Jacobson, Pearson Education, New Delhi, India.
2. “Fundamentals of Object Oriented Design in UML”, 1/e, 1999, Meilir Page, Jones, Pearson Education, India.

Reference Books:

1. “UML 2 Toolkit”, 1/e, 2003, Hans,Erik Eriksson, Magnus Penker , Brian Lyons and David Fado, WILEY Dreamtech India Pvt. Ltd., India.
2. “Modelling Software Systems Using UML2”, 1/e, 2010, Pascal Roques, WILEY Dreamtech India Pvt. Ltd.

3. "Object Oriented Analysis & Design", 1/e, 2004, Atul Kahate, The McGrawHill Companies, Hyderabad, India.
4. "Practical Object Oriented Design with UML", 2/e, 2005, Mark Priestley, TATA McGraw Hill, Hyderabad, India.
5. "Object-Oriented Analysis and Design with Applications" 3/e, 2007, Grady Booch, Robert A. Maksimchuk, Michael W. Engle, Bobbi J. Young, Jim Conallen, Kelli A. Houston, Pearson Education, India.

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III B. Tech II-Semester

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13CSE 323 UNIX AND SHELL PROGRAMMING (Common to CSE, IT)

UNIT – 1: Introduction, Working with UNIX shell

Why UNIX - UNIX environment - UNIX structure - Accessing UNIX - Commands : PATH - man - echo - printf - script - passwd - uname - who - date - stty - pwd - cd - mkdir - rmdir - ls - cp - mv - rm - cat - more - wc - lp - du - df - ps - finger - ftp - telnet - tail - head - sort - uniq - grep - cut - paste - tee - comm - cmp - diff - tar - cpio - umask - chown - chgrp, Regular expressions - grep and sed.

Introduction to shell - pipes - Input and output redirection – Quotes - Command substitution.

Shell as a programming language – Basic scripts concepts - Expressions - Decisions: Making selections - Repetition – Script examples – Debugging scripts and functions

UNIT – 2: Files

File concept - File system structure - Inodes - File attributes - File types - Library functions - 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 and Hard Links

UNIT – 3: Process and Signals

Process Concept - Kernel support for process - Process attributes - Process Control - Process Creation - Waiting for a process - Process termination - Zombie process - Orphan process - Process Apis - Introduction to signals - Signal generation and Handling - Kernel support for signals - Signal function - Unreliable signals - Kill - Raise - Alarm - Pause - Abort - Sleep functions

UNIT – 4: Inter Process Communication

Introduction to IPC - Pipes - FIFOs - Introduction to three types of IPC - Message Queues - Semaphores and Shared Memory - Kernel support for messages - Unix system V Apis for messages - Client/Server Example - Kernel support for Semaphores - Unix System V Apis for Semaphores - Kernel support for shared memory - UNIX system V Apis for shared memory - Semaphore and shared memory example

UNIT – 5: Sockets

Introduction to Sockets - Socket addresses - Socket system calls for Connection oriented protocol and connectionless protocol – Example - Client/Server programs

Text Books:

1. “UNIX System Programming using C++”, 1/e, 1999, T.Chan, PHI(UNIT III to UNIT V), New Delhi, India.

2. "Unix and shell programming", 1/e, 2003, Behrouz A. Forouzan, Richard F. Gilberg, Thomson, Australia.

Reference Books:

1. "Advanced programming in the Unix environment", 2/e, 2005, W.R.Stevens, Pearson Education, New Delhi, India.
2. "UNIX Networking Programming", 5/e, 2005, W.R. Stevens, PHI, New Delhi, India.
3. "UNIX Internals", 1/e, 1996, U.Vahalia, Pearson Education, New Delhi, India.
4. "UNIX shell Programming", 3/e, 2007, S.G. Kochan and P.Wood, Pearson Education, New Delhi, India.
5. "UNIX Shell programming", 1/e, 2002, Yashwanth Kanethkar, BPB Publications, India.

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III B. Tech II - Semester

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13CSE 324 **COMPUTER GRAPHICS (Common to CSE, IT)**

UNIT – 1: Introduction and Output Primitives

A survey of computer graphics - Overview of graphics systems – Video display devices – Raster scan systems - Random scan systems - Input devices - Points and lines - Line drawing algorithms – Mid point circle and ellipse algorithms- Scan line polygon fill algorithm – Boundary fill and flood fill algorithms

UNIT – 2: 2-D and 3-D Geometrical Transforms

2D Translation - Rotation - Scaling - Matrix representations and homogeneous coordinates - Composite transforms - Reflection and shear transformations - Transformations between coordinate systems – 3D Translation - Rotation - Scaling - Reflection and shear transformations - Composite transformations

UNIT – 3: 2 Dimensional Viewing

The viewing pipeline - Viewing coordinate reference frame - Window to view-port coordinate transformation – 2D viewing functions – Cohen sutherland and Cyrus beck line clipping algorithms - Sutherland Hodgeman polygon clipping algorithm

UNIT – 4: 3-D Object Representations and Visible Surface Detection Methods

Polygon surfaces - Quadric surfaces - Spline representation - Hermite curve - Bezier curve and B-Spline curves - Bezier and B-Spline surfaces - Classification of visible surface detection algorithms – Back face detection – Depth buffer method – Scan line method - Depth sorting method - BSP-tree method - Area sub-division and Octree methods - Basic illumination models - Polygon rendering methods

UNIT – 5: Achromatic and Coloured Light, Computer Animation

Achromatic light- Chromatic color- Color models for raster graphics-Reproducing color-Using color in computer graphics- Design of animation sequence - General computer animation functions - Raster animations - Computer animation languages - Key frame systems - Motion specifications

Text Books:

1. “Computer Graphics *C version*”, 2/e, 1997, Donald Hearn and M.Pauline Baker, Pearson Education, New Delhi, India.
2. “Computer Graphics Principles & Practice in C”, 2/e, 1995, Foley, VanDam, Feiner and Hughes, Pearson Education, New Delhi, India.

Reference Books:

1. “Computer Graphics”, 2/e, 1994, Donald Hearn and M.Pauline Baker, PHI/Pearson Education, New Delhi, India.

2. "Computer Graphics", 2/e, 1998, Zhigand Xiang, Roy Plastock, Schaum's outlines, Tata McGraw Hill, Hyderabad, India.
3. "Computer Graphics", 3/e, 1987, Steven Harrington, TMH, New Delhi, India.
4. "Interactive Computer Graphics: A Top-Down Approach with Shader-Based OpenGL" 1/e, 2011, Edward Angel, Addison Wesley Longman, New York, USA.
5. "Fundamentals of Computer Graphics",3/e, 2009, Peter Shirley, Michael Ashikhmin and Steve Marschner, New York, USA.

III B. Tech II – Semester

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13CSE 325 SOFTWARE TESTING METHODOLOGIES

UNIT - 1: Introduction to Testing, Flow Graphs and Path Testing

Purpose of testing – Dichotomies - Model for testing – The consequences of bugs – The taxonomy of bugs - Path testing basics – Predicates - Path predicates and achievable paths - Path sensitizing – Path instrumentation – Applications of path testing

UNIT - 2: Transaction Flow, Dataflow and Domain Testing

Transaction flows - Transaction flow testing techniques - Dataflow testing basics - Dataflow testing strategies - Applications - Domains and paths - Nice & Ugly domains - Domain testing - Domain and interfaces testing - Domains and testability

UNIT - 3: Paths, Path Products and Regular Expressions

Path products & Path expressions - Reduction procedure - Applications - Regular expressions & flow anomaly detection

UNIT- 4: Logic Based and Transition Testing

Overview - Decision tables - Path expressions - KV charts – Specifications - State graphs - Good & bad state graphs - State testing - Testability tips

UNIT- 5: Software Testing Tools

Winrunner – Loadrunner – Jmeter - Testdirector

Text Books:

1. “Software Testing Techniques”, 2/e, 1990, Baris Beizer, Dreamtech, New Delhi, India.
2. “Software Testing Tools”, 2/e, 2004, Dr.K.V.K.K.Prasad , Dreamtech, New Delhi, India.

Reference Books:

1. “The craft of software testing”, 2/e, 1995, Brian Marick, Pearson Education, New Delhi, India.
2. “Software Testing Techniques”, 1/e, 2008 SPD (Oreille), New Delhi, India.
3. “Software Testing in the Real World”, 1/e, 2008, Edward Kit, Pearson Education, New Delhi, India.
4. “Effective methods of Software Testing”, 3/e, 2000, Perry, John Wiley, India.
5. “Art of Software Testing”, 3/e, 2011, Meyers, John Wiley, India.

III B. Tech II-Semester

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13CSE 326 ARTIFICIAL INTELLIGENCE

UNIT – 1: Introduction to Artificial Intelligence, Problems, Problem Spaces and Search

The AI Problems - The underlying assumption - What is an AI technique? - The levels of the model - Criteria of success - Some general references - One final word and beyond - Defining the problem as a State space search - Production systems - Problem characteristics - Production system characteristics - Issues in the design of search programs

UNIT – 2: Problem Solving, Un-informed Search Strategies, Informed Search and Exploration

Uninformed search strategies - Avoiding repeated states - Informed (Heuristic) search strategies - Heuristic functions - Local search algorithms and optimization problems - Local search in continuous spaces - Backtracking search for CSPs

UNIT – 3: Knowledge and Reasoning

Logical agents – Knowledge based agents - The wumpus world – Logic - Propositional logic - a very simple logic - Reasoning patterns in propositional logic - Effective propositional inference - Agents based on propositional logic

UNIT – 4: First-Order Logic, Inference in First-Order Logic, Knowledge Representation

Representation revisited - Syntax and semantic of first order logic - Using first order logic - Knowledge engineering in first order logic - Propositional vs. First order inference - Ontological engineering - Categories and objects - Actions, Situations and Events - The internet shopping world - Reasoning systems for categories - Reasoning with default information - Truth maintenance systems

UNIT – 5: Uncertain Knowledge and Reasoning, and Learning

Uncertainty - Acting under uncertainty - Basic probability notation - The axioms of probability - Inference using full joint distributions – Independence - Baye’s rule and its use - Learning from observations - Forms of learning - Inductive learning - Learning decision trees - Ensemble Learning - Why Learning Works: Computational learning theory - Knowledge in Learning - A logical formulation of learning - Knowledge in learning

Text Books:

1. “Artificial Intelligence A Modern Approach”, 2/e, 2003, Stuart Russell and Peter Norvig, Pearson Education, New Delhi, India.
2. “Artificial Intelligence”, 3/e, 2004, Elaine Rich, Kevin Knight and Shiva Shankar B Nair, Tata McGraw Hill, Hyderabad, India.

Reference Books:

1. “Artificial Intelligence Structures and Strategies for Complex Problem Solving”, 5/e, 2005, George F. Luther, Pearson Education, New Delhi, India.
2. “Introduction to Artificial Intelligence”, 1/e, 1985, Eugene Charniak and Drew McDermott, Pearson Education, New Delhi, India.
3. “Artificial Intelligence: The Basics”, 1/e, 2012, Kevin Warwick, Wearset ltd, Boldon.
4. “Introduction to Artificial Intelligence”, 2/e, 1985, Philip C. Jackson, Dover Publications, New York, USA.
5. “Our Final Invention: Artificial Intelligence and the End of the Human Era”, 1/e, 2013, James Barrat, Thomas Dunne Books, New York, USA.

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13CSE 327 UNIX PROGRAMMING AND CASE TOOLS LAB

UNIX PROGRAMMING

1. a) Write a shell script that computes the gross salary of an employee according to the following rules
 - i) If basic salary is < 1500 then HRA=10% of the basic and DA=90% of the basic.
 - ii) If basic salary is >=1500 then HRA=Rs.500 and DA=98% of the basic.The basic salary is entered interactively through the keyboard.
- b) Write a shell script to calculate the value of X^n
2. a) Write a shell script that takes a command-line argument and reports on whether it is directory- a file- or something else.
b) Write a shell script that accepts one or more file names as arguments and converts all of them to uppercase- provided they exist in the current directory.
c) Write a shell script that displays a list of all the files in the current directory to which the user has read- write and execute permissions.
3. a) Write shell script that takes a login name as command-line argument and reports when that person logs in and the duration for which the user is working on the system.
b) Develop an interactive script that ask for a word and a file name and then tells how many times that word occurred in the file.
c) Write a shell script to find the length of a string.
4. a) Write a sed command that deletes the first character in each line in a file
b) Write a sed command that deletes the character before the last character in each line in a file.
c) Write a sed command that swaps the first and second words in each line in a file.
5. Write C programs
 - a. To display Environment variables.
 - b. To implement Different types of exec functions.
6. Write a C program
 - a. To Opening a stream
 - b. To Read and Write a stream
 - c. To Position a Stream
7. Write a C Program that takes certain file names along the command line arguments and remove if there exists any duplicates.
8. Write a C Program to find whether a file is having read- write- execute permissions and also check whether a given name is file or directory.
9. Write a C program to demonstrate Signal handling
10. Write a C program to create two pipes.
11. Write C programs for interprocess communication using FIFOs for
 - a) Related processes
 - b) Unrelated processes

12. Write a C program to implement various operations on Message Queues.
13. Write sender and receiver programs in C for communication using shared memory and semaphore.
14. Write C programs to perform Socket Programming Using
 - a. UDP socket
 - b. TCP socket

Case Tools:

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

UML diagrams to be developed are:

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

Description for an ATM System:

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

The ATM will service one customer at a time. A customer will be required to insert an ATM card and enter a personal identification number (PIN) - both of which will be sent to the bank for validation as part of each transaction. The customer will then be able to perform one or more transactions. The card will be retained in the machine until the customer indicates that he/she desires no further transactions- at which point it will be returned - except as noted below.

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

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

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

If the bank determines that the customer's PIN is invalid- the customer will be required to re-enter the PIN before a transaction can proceed. If the customer is unable to successfully enter the PIN after three tries- the card will be permanently retained by the machine- and the customer will have to contact the bank to get it back.

If a transaction fails for any reason other than an invalid PIN- the ATM will display an explanation of the problem- and will then ask the customer whether he/she wants to do another transaction.

The ATM will provide the customer with a printed receipt for each successful transaction.

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

(Autonomous)

III B.Tech II - Semester

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13CSE 328 COMPUTER GRAPHICS AND SOFTWARE TESTING LAB

Part-A

1. Study of the basic graphics functions defined in “graphics.h”.
2. Write a program to draw a hut or other geometrical figures.
3. Write a program to draw a line through Bresenham’s Algorithm.
4. Write a program to draw a line using DDA Algorithm.
5. Write a program to draw a Circle using midpoint Algorithm.
6. Write a program to draw an Ellipse using midpoint Algorithm.
7. Write a program to rotate a Circle around any arbitrary point or around the boundary of another circle.
8. Write a menu driven program to rotate- scale and translate a line point, Square, triangle about the origin.
9. Write a program to perform Cohen Sutherland 2D line clipping.
10. Write a program to perform Sutherland – Hodgeman Polygon clipping.
11. Write a program to implement transformations in three dimensions.

Software requirements: Turbo C/C++.

Part - B

1. Write programs in ‘C’ Language to demonstrate the working of the following constructs:
i) do...while ii) while....do iii) if...else iv) switch v) for
2. “A program written in ‘C’ language for Matrix Multiplication fails” Introspect the causes for its failure and write down the possible reasons for its failure.
3. Take any system (e.g. ATM system) and study its system specifications and report the various bugs.
4. Write the test cases for any known application (e.g. Banking application)
5. Create a test plan document for any application (e.g. Library Management System)
6. Study of any testing tool (e.g. Win runner)
7. Study of any web testing tool (e.g. Selenium)
8. Study of any bug tracking tool (e.g. Bugzilla- bugbit)
9. Study of any test management tool (e.g. Test Director)
10. Study of any open source-testing tool (e.g. Test Link)
11. Take a mini project (e.g. University admission- Placement Portal) and execute it. During the Life cycle of the mini project create the various testing documents* and final test report document.

*Note: To create the various testing related documents refer to the text “Effective Software Testing Methodologies by William E. Perry”

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IV B. Tech I-Semester

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13CSE 411 COMPILER DESIGN

UNIT – 1: Introduction to Compiling

Compilers - Analysis of the source program - The phases - The grouping of phases - Pass - Interpreter - The role of the lexical analyzer - Input buffering - A language for specifying lexical analyzer

UNIT – 2: Top down Parsing

Context free grammars - Top down parsing – Backtracking - LL (1) grammar - Recursive descent parsing - Predictive parsing - Pre-processing steps required for predictive parsing

UNIT – 3: Bottom up parsing

Shift Reduce parsing - SLR - CLR and LALR parsing - Operator precedence parsing - YACC – Automatic parser generator

UNIT – 4: Semantic Analysis, Symbol Table and Storage Allocation

Intermediate forms of source Programs – Abstract syntax tree - Polish notation and three address codes. Attributed grammars - Syntax directed translation - Type checker - Type checking - Type conversions - Equivalence of type expressions - Overloading of functions and operations - Symbol table format - Hashing - Tree structured organisation - Static - Runtime stack and heap storage allocation

UNIT – 5: Code Optimization and Object Code Generation

Principal sources of optimization - Optimization of basic blocks - Peephole optimization - Flow graphs - Data flow analysis of flow graphs - Object code forms - Machine dependent code optimization - Register allocation and assignment generic code generation algorithms

Text Books:

1. “Compilers Principles Techniques and Tools”, 2/e, 2008, Alfred V.Aho, Monica S. Lam, Ravi sethi, Jeffrey D. Ullman, Pearson Education, New Delhi.
2. “Modern Compiler Implementation in C”, 1/e, 2000, Andrew N. Appel, Cambridge University Press, US.

References Books:

1. “Lex & Yacc”, 2/e, 2012, John R. Levine, Tony Mason, Doug Brown, O’reilly, California
2. “Modern Compiler Design”, 2/e, 2012, Dick Grune, Henry E. Bal, Criel T. H. Jacobs, Wiley Dreamtech, New Delhi.
3. “Engineering a Compiler”, 2/e, 2008, Cooper and Linda, Elsevier, Amsterdam, Netherlands.
4. “Compiler Construction”, 1/e, 2006, Loudon, Thomson, USA.
5. “Compilers”, 1/e, 2012, Parag Himanshu Dave and Himanshu Bhalchandra Dave, Pearson Education, New Delhi.

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13CSE 412 WEB TECHNOLOGIES

UNIT – 1: HTML and XML

Common tags - List - Tables - Images - Frames - Forms - Cascading Style Sheets - Introduction to Java Scripts - Objects in java scripts – Basic XML - Document type definition - XML Schemas - Document object model - Presenting XML - Using XML processors: DOM and SAX

UNIT – 2: Introduction to Web Technologies

Introduction to Web servers like Apache 1.1, IIS and XAMPP (Bundle Server) - WAMP (Bundle Server) - Installations of above servers

Introduction to PHP – Embedding PHP code in web pages – Outputting data to web browser – PHP supported data types – Variables – Constants – Expressions – String interpolation – Control structures – Functions - Arrays

UNIT - 3: Overview of Classes, Objects and Interfaces

Creating instances using Constructors - Controlling access to class members - Extending classes – Using abstract classes and methods - Using interfaces - Using class destructors - Using exceptions – Working with Files

UNIT- 4: PHP advanced Concepts

Using cookies - Using HTTP headers - Using sessions - Authenticating users - Using environment and configuration variables - Creating and using Forms - Understanding common form issues - GET vs. POST - Validating form input - Working with multiple forms - Preventing multiple submissions of a form

UNIT – 5: PHP and Database Access

Basic database concepts - Connecting to a MYSQL database - Retrieving and displaying results - Modifying - Updating and deleting data - MVC architecture

Text Books:

1. “Web Programming, building internet applications”, 2/e, 2002, Chris Bates, WILEY Dreamtech, New Delhi.
2. “Beginning PHP and MySQL”, 4/e, 2008, Jason Gilmore, Apress Publications (Dream tech.), New York.
3. “PHP 5 Recipes A problem Solution Approach”, 1/e, 2005, Lee Babin, Nathan A Good, Frank M.Kromann and Jon Stephens, Apress, New York.

References Books:

1. “Open Source Web Development with LAMP using Linux”, 1/e, 2002, Apache, MySQL, Perl and PHP, J.Lee and B.Ware (Addison Wesley) Pearson Education, New Delhi.
2. “PHP 6 Fast and Easy Web Development”, 1/e, 2008, Julie Meloni and Matt Telles, Cengage Learning Publications, Stamford, USA.
3. “PHP 5.1”, 2/e, 2007, I. Bayross and S.Shah, The X Team, SPD, New York, USA.
4. “PHP and MySQL Web Development” ,1/e, 2009 Laura Thomson and Luke Welling , Penguin books Ltd., London, UK.
5. “PHP and MySQL”, 1/e, 2012, Mike McGrath, TMH, India.

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13CSE 413 DATA WAREHOUSING AND DATA MINING

UNIT – 1: Introduction - Data Pre-processing

Fundamentals of data mining - Data mining functionalities - Classification of data mining systems - Major issues in data mining - Data warehouse architecture - Data warehouse implementation - Needs pre-processing the data - Data cleaning - Data integration and transformation - Data reduction - Discretization and concept hierarchy generation - Data warehouse and OLAP technology for data mining data warehouse - Multidimensional data model

UNIT – 2: Data Cube Computation and Data Generalization

Efficient methods for data cube computation - Further development of data cube and OLAP technology – Attribute oriented induction – An alternative method for data generalization and concept description

UNIT - 3: Mining Frequent Patterns, Associations, and Correlations

Basic concepts and a road map – Efficient and scalable frequent itemset mining methods – Mining various kinds of association rules – from association mining to correlation analysis – Constraint based association mining

UNIT - 4: Classification and Prediction

Issues regarding classification and prediction - Classification by decision tree induction - Bayesian classification - Rule based classification - Classification by back propagation – Associative classification - Other classification methods - Prediction

UNIT – 5: Cluster Analysis

Introduction – Similarity and distance measures – Outliers – Hierarchical algorithms – Partitional algorithms – clustering large databases – clustering with categorical attributes

Text Books:

1. “Data Mining Concepts and Techniques”, 2/e, 2005, Jiawei Han, Micheline Kamber Harcourt, Morgan Kaufmann, India.
2. “Data Mining Introductory and advanced topics”, 1/e, 2006, Margaret H Dunham, Pearson Education, New Delhi, Asia.

References Books:

1. “Data Mining Techniques”, 2/e, 2010, Arun K Pujari, University Press, India.
2. “Data Warehousing in the Real World”, 1/e, 2008, Sam Anahory & Dennis Murray, Pearson Education, New Delhi, Asia.
3. “Data Mining: Concepts and Techniques”, 1/e, 2009, Vikram Pudi, Oxford University Press, US.
4. “Data Warehousing Fundamentals”, 1/e, 2006, Paulraj Ponnaiah, Wiley Student Edition, New Delhi.
5. “The Data Warehouse Life cycle Tool kit”, 2/e, 2008, Ralph Kimball, Wiley Student Edition, New Delhi.

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13CSE 414 CRYPTOGRAPHY AND NETWORK SECURITY

UNIT – 1: Introduction to Compiling - Advanced Encryption Standard

Security attacks - Security services and mechanisms - Classical encryption techniques - Symmetric cipher model - Substitution techniques - Transposition techniques - Block ciphers and the data encryption standard - Block cipher principles - The data encryption standard - The strength of DES -

Evaluation criteria for AES - The AES cipher - More on symmetric ciphers - Multiple encryption and triple DES - Block cipher modes of operation

UNIT – 2: Public Key Cryptography - Hash and Mac Algorithms

Principles - RSA algorithm - Key management - Diffie-Hellman key exchange - MD file message digest algorithm - Secure hash algorithm - HMAC.

UNIT – 3: Digital Signatures and Authentication Protocols

Digital signatures - Authentication protocols - Digital signature standards - Kerberos - X.509 directory authentication service

UNIT – 4: Electronic Mail and IP Security

Pretty good privacy - S/MIME - Overview - Architecture - Authentication - Encapsulating security payload - Combining security associations - Key management

UNIT – 5: Web Security – Intruders - Firewalls

Web security considerations - Secure socket layer and transport layer security - Secure electronic transaction - Intruders - Intrusion detection - Password management - Firewall design and principles - Trusted systems

Text Books:

1. “Cryptography and Network Security”, 4/e, 2006, William Stallings, Pearson Education, New Delhi.
2. “Network Security and Cryptography”, 1/e, 2010, Bernard Menezes, Thomson Press Ltd, USA.

Reference Books:

1. “Principles and Practices of Information Security”, 4/e, 2012, Michal E. Whitman and Herbert J. Mattord, Cengage Learning, New Delhi.
2. “Network Security Essentials (Applications and Standards)”, 4/e, William Stallings Pearson Education.
3. “Hack Proofing your network”, 2/e, 2002, Ryan Russell, Dan Kaminsky, Rain Forest Puppy, Joe Grand, David Ahmad, Hal Flynn Ido Dubrawsky, Steve W. Manzuik and Ryan Permech, wiley Dreamtech.
4. “Fundamentals of Network Security”, 1/e, 2008, Eric Maiwald (Dreamtech press).
5. “Network Security - Private Communication in a Public World”, 2/e, 2002, Charlie Kaufman, Radia Perlman and Mike Speciner, Pearson/PHI.

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13CSE 415A CLOUD COMPUTING (ELECTIVE-I)

UNIT – 1: Introductory concepts and overview

Distributed systems - Parallel computing architectures - High performance cluster computing - Grid computing - Service oriented architecture overview – Virtualization - Meaning of the terms cloud and cloud computing - cloud based service offerings - Grid computing versus Cloud computing - Benefits of cloud model - limitations - legal issues - Key characteristics of cloud computing - Challenges for the cloud - The evolution of cloud computing

UNIT – 2: Web Services Delivered From the Cloud

Infrastructure as a service - Platform-as-a-service - Software-as-a-service - Building cloud networks - Evolution from the MSP model to cloud computing and software-as-a-service - The cloud data center - SOA as step toward cloud computing - Basic approach to a data center based SOA

UNIT – 3: Federation Presence, Identity and Privacy in the cloud

Federation in the cloud - Presence in the cloud - Privacy and its relation to cloud based information system - Security in the Cloud - Cloud security challenges - Software-as-a-service security

UNIT – 4: Common Standards in Cloud Computing - End user access to cloud computing

The open cloud consortium - The distributed management task force - Standards for application developers - Standards for messaging - Standards for security - YouTube - Zimbra - Facebook - Zoho - DimDim collaboration - Mobile internet devices and the cloud - Smartphone - Mobile operating systems for smart phones - Mobile platform virtualization - Collaboration applications for mobile platforms - Future trends – Virtualization - Adding guest operating system

UNIT – 5: Case Study

Cloud computing case studies1 - Amazon EC2 - Amazon simple DB - Amazon S3 - Amazon cloud front - Amazon SQS - Cloud computing case studies2 - Google App Engine - Google web tool kit - Microsoft Azure Services platform - Windows live - Exchange on line - SharePoint services - Microsoft dynamic CRM – salesforce.com - CRM – App Exchange

Text Books:

1. “Cloud Computing implementation, management and security”, 1/e, 2009, John W. Rittinghouse, James F. Ransome, CRC Press, Taylor & Francis group, US.
2. “Cloud Computing: A practical approach”, 1/e, 2009, Anthony T. velte, Toby J. velte Robert Elsenpeter, Tata Mc Graw Hill edition, India.

Reference Books:

1. “Cloud Computing: Principles and Paradigms “, 1/e, 2013, Rajkumar Buyya, James Broberg and Andrzej Goscinski , Wiley Pvt. Ltd., India.
2. “Cloud Computing: Concepts, Technology & Architecture “, 1/e, 2013, Thomas Erl, Ricardo Puttini and Zaigham Mahmood , PHI, New Delhi.

3. "Cloud Application Architectures", 1/e, 2009, George Reese, O'Reilly publishers, California.
4. "Cloud Computing and SOA convergence in your enterprise", 1/e, 2010, David S. Linthicum, Addison-Wesley, Boston, US.
5. "Cloud Computing: SaaS, PaaS, IaaS, Virtualization, Business Models, Mobile, Security and More", 1/e, 2013, Kris Jamsa, Jones & Bartlett Learning, Massachusetts, US.

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13CSE 415B SOFT COMPUTING (ELECTIVE-I)

UNIT - 1: Introduction to Artificial Neural Networks (ANN)

Introduction - Fundamental concept - Basic models of ANN - Terminologies of ANN – MCCulloch pitts neuron - Linear separability - Hebb network - Supervised learning network - Perception networks - Adaptive linear neuron - Back propagation network

UNIT - 2: Associative Memory Networks

Training algorithms for pattern association - Auto associative memory network – BAM - Hopfield networks - Unsupervised learning network - Fixed weight competitive nets - Kohonen self organizing feature maps - Learning vector quantization - Counter propagation network - Adaptive Resonance theory network

UNIT – 3: Introduction to Fuzzy Logic

Classical sets - Fuzzy sets - Classical relations and fuzzy relations - Cartesian product of relations - Classical relation - Fuzzy relations - Tolerance and equivalence relations - Membership functions - Features of the membership function – Fuzzification - Methods of membership value assignments

UNIT – 4: Defuzzification

Lambda cuts for fuzzy set (alpha cuts) - Lamda cuts for fuzzy relations - Defuzzification methods - Fuzzy arithmetic and fuzzy measures -Fuzzy rule base and approximate reasoning

UNIT - 5: Genetic Algorithm and Applications

Introduction - Biological background - Traditional optimization and search techniques - Genetic algorithm and search space - Terminologies in genetic algorithm - General genetic algorithm - Operators in genetic algorithm - Problem solving using genetic algorithm

Advanced applications: Printed character recognition - Inverse kinematics problems - Automobile MPG prediction - Genetic algorithms in game playing

Text Books:

1. “Principles of Soft Computing”, 1/e, 2007, S.N. Sivanandam and S.N. Deepa, Wiley India Ltd., First Indian Edition, India.
2. “Neuro-Fuzzy and Soft Computing”, 1/e, 2003, Jyh-Shing Roger Jang, Chuen-Tsai Sun, Eiji Mizutani, Prentice-Hall of India, India.

Reference Books:

1. “Neural Networks Algorithms Applications”, and Programming Techniques, 2003, James A. Freeman and David M. Skapura, Pearson Edition, India.
2. “Fuzzy Sets and Fuzzy Logic-Theory and Applications”, 1995, George J. Klir and Bo Yuan, Prentice Hall, India.
3. “Artificial Intelligence and Soft Computing”, 2000, Amit Konar, ,CRC Press, First Edition, India.

4. "Neural Networks: A Comprehensive Foundation", 2/e, 2008, Simon Haykin, Pearson Education, New Delhi, India.
5. "Soft Computing and Intelligent System Design", 1/e, 2009, Fakhreddine O. Karry Clarence de Silva, Pearson Education, New Delhi, India.

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IV B. Tech I-Semester

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13CSE 415C ADVANCED COMPUTER ARCHITECTURE (ELECTIVE-I)

UNIT – 1: Parallel Computer Models, Program and Networks Properties

The state of computing - Multiprocessors and multi computers- Multi vector and SIMD computers - PRAM and VLSI models - Architectural development tracks - Conditions of parallelism - Program partitioning and scheduling - Program flow mechanisms - System interconnect architectures

UNIT – 2: Principles of Scalable Performance, Processors and Memory Hierarchy

Performance metrics and measures - Parallel processing applications - Speedup performance laws - Scalability analysis and approaches - Advanced processor technology - Superscalar and vector processors - Memory hierarchy technology

UNIT – 3: Bus, Cache, Shared Memory, Multiprocessors and Multicomputer

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 - Multiprocessor system interconnects - cache coherence and synchronization mechanisms - Three generations of multicomputers - Message passing mechanisms

UNIT – 4: Multi Vector and SIMD Computers

Vector processing principles - Multi vector multiprocessors - Compound vector processing - SIMD Computer organizations - The Connection Machine CM5 - Scalable multithreaded and dataflow architectures - Latency hiding techniques - Principles of multithreading - Fine grain multi computers - Scalable and multithreaded architectures - Dataflow and hybrid architectures

UNIT – 5: Instruction Level Parallelism and its Dynamic Exploitation

Concepts and challenges – Overcoming data hazards with dynamic scheduling - Dynamic scheduling – Reducing branch costs with dynamic hardware prediction – High performance instruction delivery – Advantages of ILP with multiple issue – Hardware based speculation – Limitations of ILP

Text Books:

1. “Advanced Computer Architecture“, 2/e, 2010, Kai Hwang and Jotwani, McGraw-Hill Publications, India.
2. “Computer Architecture A quantitative approach”, 3/e, 2003, John L.Hennessy and David A. Patterson, Morgan Kufmann (An Imprint of Elsevier), Massachusetts, US.

Reference Books:

1. “Advanced Computer Architecture”, 1/e, 2010, D.Sima, T.Fountain, P.Kacsuk, Pearson Education, New Delhi.
2. “Advanced Computer Architecture “, 1/e, 2010, R.C. Dubey , S Chand & Co Ltd, New Delhi, India.
3. “Computer Architecture and Parallel Processing”, 1/e, 1986, Hwang and Briggs, TMH, India.
4. “Advanced Computer Architecture”, 1/e, 2012, Amith Kumar Mishra, S K Kataria and Sons, New Delhi, India.
5. “Advanced Computer Architectures”, 1/e, 2005, Sajjan G. Shiva, CRC Press, US.

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IV B. Tech I-Semester

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13CSE 416A GRID AND CLUSTER COMPUTING (ELECTIVE-II)

UNIT – 1: Introduction

The different forms of computing - The strengths and weaknesses of distributed computing – Basics of operating systems - The architecture of distributed applications - Paradigms for distributed applications - Choosing a paradigm for an application (trade-offs)

UNIT – 2: The Client Server Paradigm and Group Communication

Client-server paradigm issues - Software engineering for a network service - Connection-oriented and connectionless servers - Iterative server and concurrent server - Stateful servers - Unicasting versus Multicasting - An archetypal multicast API - Connectionless versus connection-oriented multicast - Reliable multicasting versus unreliable multicasting - The java basic multicast API - Reliable multicast API

UNIT – 3: Cluster Computing

Introduction - Scalable parallel computing architectures - A cluster computer and its architecture - Clusters classification - Commodity components for clusters - Cluster middleware and single system image - Resource management and scheduling - Cluster applications

UNIT – 4: Grid Computing

Introduction - Grid computing anatomy – Grid architecture - Architecture and relationship to other distributed technologies - Grid computing roadmap - Merging the grid services architecture with the web services architecture

UNIT – 5: Open Grid Service Architecture

Introduction – OGSA architecture and goal - Sample use cases - Commercial data center - National fusion collaboratory - Online media and entertainment - OGSA platform components - Open grid services infrastructure

Text Books:

1. “Distributed Computing, Principles and Applications”, 1/e, 2004, M.L.Liu, Pearson Education, New Delhi.
2. “High Performance Cluster Computing”, 1/e, 1999, Rajkumar Buyya, Pearson education, New Delhi.
3. “Grid Computing”, 1/e, 2004, Joshy, Joseph and Craig Fellenstein, Pearson education, New Delhi.

Reference Books:

1. “Grid Computing: Making the global infrastructure a reality”, 1/e, 2010, Fran Berman, Geoffrey C Fox, Anthony J G Hey, Wiley India.
2. “A Networking Approach to Grid Computing”, 2/e, 2006, D.Minoli, Wiley & sons, India.
3. “Grid Computing: A Practical Guide to Technology and Applications”, 1/e, 2013, A.Abbas, Firewall Media, Delhi.

4. "Grid and Cluster Computing", 2/e, 2013, Prabhu C.S.R., PHI, New Delhi.
5. "Grid Computing: A Research Monograph", 1/e, 2005, D Janakiram, TMH, India.

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13CSE 416B SOFTWARE PROJECT MANAGEMENT (ELECTIVE – II)

UNIT – 1: Understand the Basics

Manage your people – Managing project culture – Managing good people – Making good people better – Leading good people – Implement your process – Putting a process in place – Implementing a process – Adopting an agile process – Assessing a process – Leverage your tools – Choosing tools – Training to use tools – Leveraging tools – Use your measurements – Selecting measurements – Planning measurement – Leveraging measurement

UNIT – 2: Conventional and Modern Software Management

Principles of conventional software engineering - Principles of modern software management - Transitioning to an iterative process - Life cycle phases - Engineering and production stages - Inception phases - Elaboration phases - Construction phases - Transition phases

UNIT – 3: Artifacts of the Process Model based Software Architectures

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 - Checkpoints of the process - Major milestones - Minor milestones - Periodic status assessments - Iterative process planning - Work break down structures - Planning guidelines – The cost and schedule estimating process – The iteration planning process - Pragmatic planning

UNIT – 4: Project Organizations and Responsibilities

Line of business organizations - Project organizations - Evolution of organizations - Process automation - Automation building blocks - The project environment

UNIT – 5: 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 discriminates - Example

Text Books:

1. “Software Project Management”, 1/e, 1998, Walker Rayce, PEA, New Delhi.
2. “Software Project Management”, 2/e, 2009, Henrey, Pearson Education, New Delhi.

Reference Books:

1. “Software Engineering Project Management”, 2/e, 1997, Richard H. Thayer, IEEE Computer Society, US.
2. “Software Engineering and Management”, 2/e, 1998, Shere K. D, PHI, New Delhi.
3. “Software Project Management: A Concise Study”, 2/e, 2009, S. A. Kelkar, PHI, New Delhi.
4. “Software Project Management”, 5/e, 2011, Hughes Cotterell, TMH, India.
5. “Software Project Management”, 1/e, 2011, Mohapatra S , Penguin Books Ltd, London,UK.

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13CSE 416C DISTRIBUTED SYSTEMS (ELECTIVE – II)

UNIT – 1: Characterization of Distributed Systems and System Models

Introduction - Examples of distributed systems - Resource sharing and web - Challenges - Architectural and fundamental models - Networking and internetworking - Inter process communication

UNIT – 2: Distributed objects and Remote Invocation

Introduction - Communication between distributed objects – Remote procedure call - Events and notifications - Case study: Java RMI

Operating System Support: OS layer - Protection - Processes and Threads - Communication and invocation - Operating system architecture

Distributed file systems: File Service architecture - Case study: Sun network file system – The Andrew file system

UNIT – 3: Name Services and Peer to Peer Systems

Introduction - Name services and the domain name system - Directory services - Case study of the global name service - Case study of the X.500 directory service

Peer to peer systems: Napster and its legacy - Peer to peer middleware - Routing overlays - Overlay case studies - Pastry - Tapestry - Application case studies - Squirrel - Ocean store

UNIT – 4: Concurrency Control and Mutual Exclusion

Introduction - Transactions - Nested transactions - Locks - Optimistic concurrency control - Timestamp ordering - Comparison of methods for concurrency control

Mutual Exclusion: Introduction – Solutions using message passing: Lamport’s solution – Ricart – Agrawala’s solutions – Maekawa’s solutions – Token passing algorithms: Suzuki-kasami algorithm – Raymond’s algorithm

UNIT – 5: Distributed Transactions and Replicated Data Management

Introduction – Classification of transactions – Implementing transactions - Concurrency control and serializability - Atomic commit protocols – Recovery from failures – Architecture of replicated data management - Data centric consistency models – Client centric consistency protocols – Replica placement – Case Studies

Text Books:

1. “Distributed Systems Concepts and Design”, 5/e, 2011, G Coulouris, J Dollimore and T Kindberg, Pearson Education, New Delhi.
2. “Distributed Systems”, 2/e, 2010, S.Ghosh, Chapman and Hall/CRC, Taylor & Francis Group, US.

Reference Books:

1. "Distributed Computing", 2/e, 2013, S.Mahajan and S.Shah, Oxford University Press, US.
2. "Distributed Operating Systems Concepts and Design", 1/e, 1998, Pradeep K.Sinha, PHI, New Delhi.
3. "Advanced Concepts in Operating Systems", 1/e, 2001, M Singhal, N G Shivarathri, Tata McGraw-Hill Edition, India.
4. "Reliable Distributed Systems", 1/e, 2005, K.P.Birman, Springer, New York.
5. "Distributed Systems: Principles and Paradigms", 2/e, 2008, A.S. Tanenbaum and M.V. Steen, Pearson Education, New York.
6. "Distributed Operating Systems and Algorithm Analysis", 5/e, 2009, R.Chow, T.Johnson,Pearson, New Delhi.
7. "Distributed Operating Systems", 1/e, 2009, A.S.Tanenbaum, Pearson Education, New Delhi.

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13CSE 417 WEB TECHNOLOGIES LAB

Objective: To create a fully functional website with mvc architecture. To Develop an online Book store using we can sell books (Ex amazon .com).

Hardware and Software required:

1. A working computer system with either Windows or Linux
2. A web browser either IE or fire fox
3. Apache web server or IIS Web server
4. XML editor like Altova Xml-spy [www.Altova.com/XMLSpy – free], Stylus studio , etc.,
5. A database either Mysql or Oracle
6. JVM(Java virtual machine) must be installed on your system
7. BDK(Bean development kit) must be also be installed

Week-1:

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

1) **HOME PAGE:**

The static home page must contain three **frames**.

Top frame : Logo and the college name and links to Home page, Login page, Registration page, Catalogue page and Cart page (the description of these pages will be given below).

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

For e.g.: When you click the link “CSE” the catalogue for CSE Books should be displayed in the Right frame.

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

Logo	Web Site Name			
Home	Login	Registration	Catalogue	Cart
CSE ECE EEE CIVIL	Description of the Web Site			

Fig 1.1

2) LOGIN PAGE:

This page looks like below:

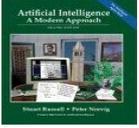
Logo	Web Site Name			
Home	Login	Registration	Catalogue	Cart
CSE	Login : <input type="text"/> Password: <input type="text"/>			
ECE				
EEE				

3) CATALOGUE PAGE:

The catalogue page should contain the details of all the books available in the web site in a table.

The details should contain the following:

1. Snap shot of Cover Page.
2. Author Name.
3. Publisher.
4. Price.
5. Add to cart button.

Logo	Web Site Name			
Home	Login	Registration	Catalogue	Cart
CSE		Book : XML Bible Author : Winston	\$ 40.5	
ECE		Publication : Wiely		
EEE		Book : AI Author : S.Russel	\$ 63	

CIVIL		Publication : Princeton hall		
		Book : Java 2 Author : Watson Publication : BPB publications	\$ 35.5	
		Book : HTML in 24 hours Author : Sam Peter Publication : Sam publication	\$ 50	

Note: Week 2 contains the remaining pages and their description.

Week-2:

4) CART PAGE:

The cart page contains the details about the books which are added to the cart.

The cart page should look like this:

Logo	Web Site Name			
Home	Login	Registration	Catalogue	Cart
CSE	Book name	Price	Quantity	Amount
ECE				
EEE	Java 2	\$35.5	2	\$70
CIVIL	XML bible	\$40.5	1	\$40.5
	Total amount ,			\$130.5

5) REGISTRATION PAGE:

Create a “*registration form*” with the following fields

- 1) Name (Text field)
- 2) Password (password field)
- 3) E-mail id (text field)
- 4) Phone number (text field)
- 5) Sex (radio button)
- 6) Date of birth (3 select boxes)
- 7) Languages known (check boxes – English, Telugu, Hindi, Tamil)
- 8) Address (text area)

WEEK 3:

VALIDATION:

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

1. Name (Name should contains alphabets and the length should not be less than 6 characters).
2. Password (Password should not be less than 6 characters length).
3. E-mail id (should not contain any invalid and must follow the standard pattern name@domain.com)
4. Phone number (Phone number should contain 10 digits only).

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

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.

For example:

```
<HTML>
<HEAD>
<style                                type="text/css">
B.headline {color:red, font-size:22px, font-family:arial,
text-decoration:underline}
</style>

</HEAD>

<BODY>
<b>This           is           normal           bold</b><br>
Selector         { cursor:value }
```

```

For example:

<html>
<head>
<style type="text/css">
.xlink {cursor:crosshair}
.hlink{cursor:help}
</style>
</head>

<body>
<b>
<a href="mypage.htm" class="xlink">CROSS
LINK</a>
<br>
<a href="mypage.htm" class="hlink">HELP
LINK</a>
</b>
</body>
</html>

<b class="headline">This is headline style bold</b>
</BODY>

</HTML>

```

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:

```

BODY {background-image:url(myimage.gif),}

```

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

Example:

```

<style type="text/css">
A:link {text-decoration: none}
A:visited {text-decoration: none}
A:active {text-decoration: none}
A:hover {text-decoration: underline, color: red,}
</style>

```

5) Work with layers:

For example:

LAYER 1 ON TOP:

```
<div style="position:relative, font-size:50px, z-index:2,">LAYER 1</div>      <div
style="position:relative, top:-50, left:5, color:red, font-size:80px, z-
index:1">LAYER 2</div>
```

LAYER 2 ON TOP:

```
<div style="position:relative, font-size:50px, z-index:3,">LAYER 1</div>      <div
style="position:relative, top:-50, left:5, color:red, font-size:80px, z-
index:4">LAYER 2</div>
```

6) Add a customized cursor:

Selector {cursor:value}

For example:

```
<html>
<head>
<style                                type="text/css">
.xlink                                {cursor:crosshair}
.hlink{ cursor:help}
</style>
</head>

<body>
<b>
<a href="mypage.htm" class="xlink">CROSS LINK</a>
<br>
<a href="mypage.htm" class="hlink">HELP LINK</a>
</b>
</body>
</html>
```

Week-5:

Write an XML file which will display the Book information which includes the following:

- 1) Title of the book
- 2) Author Name
- 3) ISBN number
- 4) Publisher name
- 5) Edition
- 6) Price

Write a Document Type Definition (DTD) to validate the above XML file.

Display the XML file as follows.

The contents should be displayed in a table. The header of the table should be in color GREY. And the Author names column should be displayed in one color and should be capitalized and in bold. Use your own colors for remaining columns.

Use XML schemas XSL and CSS for the above purpose.

Note: Give at least for 4 books. It should be valid syntactically.
Hint: You can use some xml editors like XML-spy

Week-6:

Write the PHP script for the following:

- (a) Sort the array elements with and without using sort() function.
- (b) Gives the number of occurrences of the expression in a string using functions.

Week-7:

1) Install IIS web server and APACHE.

While installation assign port number 4040 to IIS and 8080 to APACHE. Make sure that these ports are available i.e., no other process is using this port.

2) Access the above developed static web pages for books web site, using these servers by putting the web pages developed in week-1 and week-2 in the document root.

Access the pages by using the urls : <http://localhost:4040/rama/books.html> (for tomcat)

<http://localhost:8080/books.html> (for Apache)

Week-8:

User Authentication :

Assume four users user1,user2,user3 and user4 having the passwords pwd1,pwd2,pwd3 and pwd4 respectively. Write a PHP 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 (week1) and authenticate with the values (user id and passwords) available in the cookies.

If he is a valid user(i.e., user-name and password match) you should welcome him by name(user-name) else you should display “ You are not an authenticated user ”.

Use init-parameters to do this.

Week-9:

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).

Write a PHP 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 (week2).

Week-10:

Write a PHP which does the following job:

Insert the details of the 3 or 4 users who register with the web site (week9) by using registration form. Authenticate the user when he submits the login form using the user name and password from the database (similar to week8 instead of cookies).

Week-11:

Create tables in the database which contain the details of items (books in our case like Book name, Price, Quantity, Amount) of each category. Modify your catalogue page (week 2) in such a way that you should connect to the database and extract data from the tables and display them in the catalogue page using PHP

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(i.e., from different systems in the LAN using the ip-address instead of localhost). 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 (by using the method `session.invalidate()`).

Modify your catalogue and cart PHP pages to achieve the above mentioned functionality using sessions.

13CSE 417 DATA MINING & NETWORK SECURITY LAB

Part A:

The objective of the lab exercises is to use data mining techniques to identify customer segments and understand their buying behaviour and to use standard databases available to understand DM processes using WEKA (or any other DM tool)

1. Gain insight for running pre- defined decision trees and explore results using MS OLAP Analytics.
2. Using IBM OLAP Miner – Understand the use of data mining for evaluating
3. The content of multidimensional cubes.
4. Using Teradata Warehouse Miner – Create mining models that are executed in SQL. (BI Portal Lab:

The objective of the lab exercises is to integrate pre-built reports into a portal application).

5. Publish cognos cubes to a business intelligence portal.
6. Metadata & ETL Lab: The objective of the lab exercises is to implement metadata import agents to pull metadata from leading business intelligence tools and populate a metadata repository. To understand ETL processes.
7. Import metadata from specific business intelligence tools and populate a meta data repository.
8. Publish metadata stored in the repository.
9. Load data from heterogenous sources including text files into a pre-defined warehouse schema. Case study.
10. Design a data mart from scratch to store the credit history of customers of a bank. Use this credit profiling to process future loan applications.
11. Design and build a Data Warehouse using bottom up approach titled ‘Citizen Information System’.

This should be able to serve the analytical needs of the various government departments and also provide a global integrated view

Part B:

1. Write the program for the following Substitution cipher techniques
 - a. Caesar cipher
 - b. Mono alphabetic cipher
 - c. Poly alphabetic cipher
2. Write a program for transposition cipher technique
3. Take a 64 bit playing text and encrypt the same using DES algorithm.
4. Write a program to break the above DES coding.
5. Using RSA algorithm encrypt a text data and Decrypt the same.
6. Using Diffie Hellman key exchange algorithm, encrypt a text data and Decrypt the same.

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13CSE 421 INTERNETWORKING WITH TCP/IP (Common to CSE, IT)

UNIT – 1: The OSI Model and The TCP/IP Protocol Suite

TCP/IP protocol suite - Addressing- Internet protocol version 4 (IPv4) - Datagrams - Fragmentation - Options - Checksum - IPv4 addresses - Introduction - Classful addressing - Classless addressing - Special addresses - NAT

UNIT – 2: Address Resolution Protocol (ARP)

Address mapping - The ARP protocol - ATMAPR - ARP package - Internet control message protocol Version 4 - Introduction - Messages - Debugging tools - ICMP package - Unicast routing protocols (RIP, OSPE and BGP) - Introduction - Intra and inter domain routing - Distance vector routing - RIP - Link state routing - OSPF - Path vector routing - BGP

UNIT – 3: User Datagram Protocol (UDP)

Introduction - User datagram - UDP services - UDP applications - UDP package - Transmission control protocol (TCP) - TCP services - TCP features - Segment - A TCP connection-Windows in TCP - Flow control - Error control - Congestion control - TCP timers - Options - TCP package

UNIT – 4: Remote Login

TELNET and SSH- TELNET - Secure shell (SSH) - File transfer - FTP and FTP - FTP - TFTP

UNIT – 5: Internet Protocol Version 6

Introduction - Advantages of IPv6 - IPv6 addressing format - IPv6 header - IPv6 extension headers - ICMPv6

Text Books:

1. “TCP/IP Protocol Suite”, 4/e, April 2009, Behrouz A.Forouzan, Tata McGrawHill, Hyderabad, India.
2. “Introduction to Data Communications and Networking”, 3/e, May 1998, Wayne Tomasi, Pearson Education, New Delhi, India.

References Books:

1. “Internetworking with TCP/IP”, 2/e, 2006, Douglas E. Comer, Stevens, PHI, New Delhi, India.
2. “TCP/IP Network Administration”, 3/e, August 1992, Craig Hunt, O’Reilly, New Delhi, India.
3. “TCP/IP Illustrated, Volume 1: The Protocols”, 2/e, 2011, Kevin R. Fall, W. Richard Stevens, Pearson Education, New Delhi, India.
4. “The TCP/IP Guide:A Comprehensive, Illustrated Internet Protocols Reference”, 1/e, 2005, Charles M. Kozierok, William Pollock, San Francisco, Usa.
5. “TCP/IP Sockets in C: Practical Guide for Programmers”, 1/e, 2001, Michael J. Donahoo, Kenneth L. Calvert, Morgan Kaufmann, San Francisco, Usa.

13CSE 422A HUMAN COMPUTER INTERACTION (ELECTIVE-III)

UNIT – 1: Introduction

Importance of user interface - Definition - Importance of good design - Benefits of good design - A brief history of the human computer interface - The graphical user interface - Popularity of graphics - The concept of direct manipulation - Graphical systems - Characteristics – Web user Interface –the popularity of the web - Characteristics of a web interface - Principles of user interface design

UNIT – 2: Design Process

Human interaction with computers - Importance of human characteristics in design - Human consideration in design - Human interaction speeds - Understanding business functions

UNIT – 3: Screen Designing

Interface design goals - 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 - Presenting information simply and meaningfully – Reading browsing and searching on the web - Statistical graphics - Technological consideration in interface design

UNIT – 4: Windows and its Components

Menus - Navigation schemes - Selection of devices based controls – Selection of screen based controls - Text and messages - Icons and images - Multimedia - Colors - Choosing colors

UNIT – 5: Software Tools and Interaction Devices

Software tools - Specification methods - Interface building tools - Interaction devices - Keyboard and function keys - Pointing devices - Speech recognition digitization and generation - Image and video displays – Printers.

Text Books:

1. “The essential guide to user interface design”, 3/e, 2007, Wilbert O Galitz, Wiley Dreamtech, New Delhi, India.
2. “Designing the user interface”, 3/e, 2004, Ben Shneidermann, Pearson Education, New Delhi, India.

Reference Books:

1. “Human Computer Interaction”, 3/e, 2004, Alan Dix, Janet Finckay, Gre Goryd, Abowd, Russell Beal, Pearson Education, New Delhi, India.
2. “Interaction Design”, 3/e, 2011, Preece, Rogers, Sharps, Wiley Dreamtech, New Delhi, India.
3. “User Interface Design”, 1/e, 2005, Soren Lauesen, Pearson Education, New Delhi, India.
4. “Human Computer Interaction: An Empirical Research Perspective”, 1/e, 2013, I.Scott MacKenzie, Morgan Kaufmann, San Francisco, Usa.
5. “Human Computer Interaction Handbook: Fundamentals, Evolving Technologies, and Emerging Applications”, 3/e, 2012, Julie A. Jacko, CRC Press, Boca Raton, Usa.

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13CSE 422B DISTRIBUTED DATABASES (ELECTIVE-III)

UNIT – 1: Distributed versus Centralized Databases

Features of distributed versus centralized databases - Principles of distributed databases - Levels of distribution transparency - Reference architecture for distributed databases - Types of data fragmentation - Integrity constraints in distributed databases

UNIT – 2: Translation of Global Queries to Fragment Queries

Translation of global queries to fragment queries - Equivalence transformations for queries - Transforming global queries into fragment queries - Distributed grouping and aggregate function evaluation - Parametric queries - Optimization of access strategies - A framework for query optimization - Join queries - General queries

UNIT – 3: Management of Distributed Transactions

The management of distributed transactions - A framework for transaction management - Supporting atomicity of distributed transactions - Concurrency control for distributed transactions - Architectural aspects of distributed transactions

UNIT – 4: Distributed Concurrency Control

Locking based concurrency control algorithm - Time based concurrency control algorithm – Optimistic concurrency control algorithm - Deadlock management

UNIT – 5: Reliability Control

Reliability - Basic concepts – Non blocking commitment protocols - Reliability and concurrency control - Determining a consistent view of the network - Detection and resolution of inconsistency - Checkpoints and cold restart - Distributed database administration - Catalog management in distributed databases - Authorization and protection

Text Books:

1. “Distributed Database Principles & Systems”, 2/e, 2008, Stefano Ceri, Giuseppe Pelagatti, McGrawHill, Hyderabad, India.
2. “Principles of Distributed Database Systems”, 2/e, 2011, M.Tamer Ozsu, Patrick Valduriez, Pearson Education, New Delhi, India.

Reference Books:

1. “Distributed Database Management Systems: A Practical Approach”, 1/e, 2010, Saeed K. Rahimi, Frank S. Haug, Wiley Publications, New Delhi, India.
2. “Distributed Database Systems”, 1/e, 2012, Chhanda Ray, Pearson Education, New Delhi, India.
3. “Distributed Database Systems”, 1/e, 1992, David Bell, Jane Grimson, Addison Wesley, New York, Usa.
4. “Distributed Databases, Cooperative Processing, and Networking”, 1/e, 1992, Shaku Atre, McGrawHill, Hyderabad, India.
5. “Distributed Systems: Vol. II: Distributed Data Base Systems”, 1/e, 1986, Wesley W. Chu, Artech Print on Demand, New York, USA.

13CSE 422C SIMULATION AND MODELING (Common to CSE, IT)

(ELECTIVE-III)

UNIT – 1: Introduction to Simulation and System Models

The concepts of a system - System environment - Stochastic activities - Continuous and discrete systems - System modelling - Types of models - Static and dynamic physical models - Static and dynamic mathematical models - Principles used in modelling - Advantages and disadvantages of simulation - Areas of application - Systems and system environment - Discrete event system simulation - Steps in a simulation study

UNIT – 2: Random Numbers

Random number generation - Properties of random numbers - Generation of pseudo random numbers - Techniques of generating random numbers - Linear congruential method - Tests for random numbers - Random variate generation - Inverse transform technique - Exponential distribution - Uniform distribution - Weibull distribution - Empirical continuous distribution – Direct transformation for normal distribution – Convolution method - Erlang distribution - Acceptance-rejection technique

UNIT – 3: System Simulation and Continuous System Simulation

Types of system simulation - Monte carlo method - Comparison of simulation and analytical methods - Numerical computation techniques for continuous and discrete models - Distributed lag models - Cobweb model - Continuous system models - Analog and hybrid computers - Digital analog simulators - Continuous system simulation languages - Hybrid simulation - Real time simulations

UNIT – 4: System Dynamics and Probability Concepts in Simulation

Exponential growth and decay models - Logistic curves - Generalization of growth models - System dynamics diagrams - Multi segment models - Representation of time delays - Discrete and continuous probability functions - Continuous uniformly distributed random numbers

UNIT – 5: Arrival Patterns and Discrete System Simulation

Poisson arrival patterns - Exponential distribution - Hyper exponential distribution - Service times – The normal distribution - Queuing disciplines – Measures of queues – Discrete events – Representation of time – Generation of arrival patterns – Simulation of a telephone system – Delayed calls – Simulation programming tasks – Gathering statistics – Counters and summary statistics – Measuring utilization and occupancy – Recording distribution and transit times – Discrete simulation languages

Text Books:

1. “System simulation”, 2/e, 2006, Geoffrey Gordon, Prentice Hall of India, New Delhi, India.

2. "Discrete Event System Simulation", 2/e, 2000, Jerry Banks, John Carson, Barry L.Nelson and David Nicol, Prentice Hall Inc., New Delhi, India.

Reference Books:

1. "Simulation Modelling", 1/e, 2003, Seila, Cengage Learning, New Delhi, India.
2. "Simulation Modelling and Analysis", 3/e, 2000, Law, McGraw-Hill, Hyderabad, India.
3. "System Simulation with Digital Computer", 2/e, 1983, Deo, PHI, New Delhi, India.
4. "Simulation Modelling Methods", 1/e, 2000, Harrington, McGraw-Hill, Hyderabad, India.
5. "System Modelling and Simulation", 1/e, 2001, Severance, Wiley Publications, New Delhi, India.

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13CSE 423A DESIGN PATTERNS (Common to CSE, IT) (ELECTIVE –IV)

UNIT – 1: Introduction

What is a design pattern - Design patterns in small talk MVC - Describing design patterns - Catalog of design patterns - Organizing the catalog – How design patterns solve design problems – How to select a design pattern – How to use a design pattern

UNIT – 2: A Case Study: Designing a Document Editor

Design problems - Document structure - Formatting - Embellishing the user interface - Supporting multiple look and feel standards - Supporting multiple window systems - User operations - Spelling checking and hyphenation

UNIT – 3: Creational Patterns

Abstract factory - Builder – Factory method - Prototype - Singleton

UNIT – 4: Structural Patterns

Adapter - Bridge - Composite - Decorator - Façade – Flyweight - Proxy

UNIT – 5: Operational and Extension Patterns

Introducing operations - Template method - State - Strategy - Command – Interpreter - Iterator - Visitor - Mediator - Memento - Observer

Text Books:

1. “Design Patterns: Elements of Reusable Object Oriented Software”, 1/e, 2008, Gamma, Belm, Johnson, Pearson Education, New Delhi, India.
2. “Design patterns in java: Software Patterns Series”, 1/e, 2006, Steven John Metsker, William C. Wake, Pearson Education, New Delhi.

References Books:

1. “Java Design Patterns”, 1/e, 2000, Cooper, Pearson Education, New Delhi, India.
 2. “Object Oriented Design and Patterns”, 2/e, 2012, Horstmann, Wiley, Wiley India Pvt Ltd India.
 3. “Object Oriented Systems Development”, 1/e, 1999, Ali Bahrami, McGrawHill, Hyderabad, India.
 4. “Applying UML Patterns”, 3/e, 2008, Larman, Pearson Education, New Delhi, India.
 5. “Programming in the Large with Design Patterns”, 3/e, 2012, Eddie Burris, Pretty Print Press, Leawood Kansas, Usa.
- “Head First Design Patterns”, 3/e, 2004, Eric Freeman, Oreilly, SPD, Motilal UK Books, New Delhi, India.

13CSE 423B SERVICE ORIENTED ARCHITECTURE (ELECTIVE –IV)

UNIT – 1: Introduction and Evolution of SOA

Fundamental SOA - Common characteristics of contemporary SOA – Common tangible benefits of SOA – Common pitfalls of adopting SOA - SOA timeline (from XML to web services to SOA) - The continuing evolution of SOA (standards organizations and contributing vendors) - The roots of SOA (comparing SOA to past architectures)

UNIT – 2: Principles of Service- Orientation and Service Layers

Services-orientation and the enterprise - Anatomy of a service-oriented architecture - Common principles of service-orientation - Service orientation and object orientation - Service layer abstraction
Application service layer - Business service layer - Orchestration service layer

UNIT – 3: Web Services and Contemporary SOA

The web services framework - Services (as web services) - Service descriptions (with WSDL) - Messaging (with SOAP) – Message exchange patterns - Service activity - Coordination - Atomic transactions - Business activities - Orchestration - Choreography

UNIT – 4: Web Services Security and Advanced Messaging

Message level security - Data level security - XML Encryption - XML Signature - Reliable Messaging - Notification - WS - Eventing - WS - Notification

UNIT – 5: Business Process Design

WS - BPEL language basics - WS - Coordination overview – Service Oriented Business Process Design (a step-by-step process) - WS - Addressing language basics - WS - Reliable messaging language basics

Text Books:

1. “Service-Oriented Architecture Concepts and Technology and Design”, 1/e, 2006, Thomas Erl, Pearson Education, New Delhi, India.
2. “Understanding SOA with Web Services”, 1/e, December 2004, Eric Newcomer, Greg Lomow, Pearson Education, New Delhi, India.

References Books:

1. “Service-Oriented Architecture (SOA): A Planning and Implementation Guide for Business and Technology”, 1/e, 2006, Eric A. Marks, Michael Bell, Wiley Publication, New Delhi, India.
2. “Developing Enterprise Web Services An Architect’s Guide”, 2/e,2004, Sandeep Chatterjee, James Webber, Pearson Education, New Delhi, India.
3. “Service-Oriented Architecture (SOA) Compass: Business Value, Planning, and Enterprise Roadmap”, 1/e, 2005, Norbert Bieberstein, Sanjay Bose, Marc Fiammante, Keith Jones, Rawn Shah, IBM Press, New Delhi, India.
4. “SOA in Practice: The Art of Distributed System Design(Theory in Practice)”, 1/e, 2007, Nicolai M. Josuttis, O’Reilly, New York, Usa.
5. “ IT Architecture and Middleware Strategies for Building Large Integrated Systems”, 1/e, 2000, Chris Britton, Addison Wesley, New Delhi, India.

13CSE 423C NETWORK MANAGEMENT SYSTEM (Common to CSE, IT)

(ELECTIVE-IV)

UNIT – 1: Data Communications and Network Management Overview

Analogy of telephone network management – Data and telecommunication network – Distributed computing environments – TCP/ IP based networks - Communications protocols and standards - Case histories of networking and management - Network management: Goals – Organization - Functions - Network and system management

UNIT – 2: SNMPv1

SNMP network management concepts – Background – Basic concepts - SNMP management information – Structure of management information – Practical issues – Standard MIBs – MIB II – Ethernet interface MIB

UNIT – 3: RMON

Remote network monitoring: statistics collection – Basic concepts – Statistics group – History group – Host group – HostTopN group – Matrix group – Tokenring extensions to RMON – Remote network monitoring: alarms and filters – Alarm group – Filter group – Packet capture group – Event group – RMON2 – Overview – Protocol directory group – Protocol distribution group – Address map group – RMON2 host groups – RMON2 matrix groups – User history collection group – Probe configuration group – Extensions to RMON1 for RMON2 devices

UNIT – 4: SNMPv2

Management Information – Background – Structure of management information – Protocol – Protocol operations – Transport mappings – Coexistence with SNMPv1 – MIBS and conformance – SNMPv2 management information base – Conformance statements – Evolution of the interfaces group of MIB II

UNIT – 5: SNMPv3

Cryptographic algorithms – Conventional encryption with DES – The MD5 secure hash function – The SHA 1 secure hash function – Message authentication with HMAC – SNMPv3 architecture – SNMPv3 applications – MIBs for SNMPv3 – applications- Message processing and user based security model – View based access control model

Text Books:

1. “Network Management Principles and Practice”, 1/e, December 1999, Mani Subramanian, Addison Wesley, New York, USA.
2. “SNMPv2 SNMPv3 and RMON 1 and 2”, 3/e, 2006, William Stallings, Addison Wesley, New York, USA.

References Books:

1. “Practical Guide to SNMPv3 and Network Management”, 1/e, May 1999, David Zeltserman, Prentice Hall, New Delhi, India.
2. “Network Security and Management”, 3/e, 2012, Brijendra Singh, PHI, New Delhi, India.
3. “Network management”, 1/e, 2010, Morris, Pearson Education, New Delhi, India.
4. “Principles of Network System Administration”, 2/e, December 2003, Mark Burges, Wiley Dreamtech, India.
5. “Distributed Net work Management”, 1/e, September 1994, Paul, John Wiley Dreamtech, India.