CMR COLLEGE OF ENGINEERING & TECHNOLOGY (Autonomous)

ACADEMIC REGULATIONS FOR B.TECH. DEGREE COURSE

(Applicable for Students admitted from the academic year 2014-2015)

1. Award of B.Tech. degree

A student will be declared eligible for the award of the B. Tech. Degree if he/she fulfils the following academic regulations:

1.1. The student shall pursue a course of study for not less than four academic years and not more than eight academic years.

1.2. After eight academic years of course of study, a student may be permitted to write the examinations for two more years.

1.3. The student shall register for 224 credits and secure a minimum of 216 credits, with compulsory subjects as listed in Table-1. The candidate shall also complete the non-credit courses as per the syllabus.

Table-1

S. No.	Subject Particulars
1	All practical subjects
2	Mini project
3	Comprehensive Viva-Voce
4	Seminar
5	Project Work

1.4. The students, who fail to fulfill all the academic requirements for the award of the degree within ten academic years from the year of their admission, shall forfeit their seats in B.Tech. course.

2. Courses of study

The following courses of study are offered at present for specialization for the B. Tech. Course:

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

2.1. Eligibility criteria for admission

The eligibility criteria for admission into engineering courses by regular and lateral entry scheme students shall be as stipulated by the state government from time to time.

2.2. Medium of instruction

The medium of instruction and examinations for all courses is English.

3. Distribution and weightage of marks

3.1. The performance of a student in each semester shall be evaluated subject – wise with **a** maximum of 100 marks for theory and 75 marks for practical subjects. In addition, an Industry oriented mini-project, Seminar, Comprehensive viva-voce, and Project Work shall be evaluated for 50, 50, 100 and 200 marks respectively.

3.3. For Theory subjects, during a semester there shall be two internal examinations. Each internal examination consists of one objective paper, one essay paper and one assignment. The objective type paper shall be for 10 marks, essay type paper shall be for 15 marks each with a total duration of 1 hour 20 minutes (20 minutes for objective and 60 minutes for essay paper). The objective paper is set with 10 short answer questions of one mark each. The essay paper shall contain 5 full questions (2 questions each from fully completed Units and 1 question from partially completed Unit) out of which, the student has to answer 3 questions, each carrying 5 marks. While the first internal examination shall be conducted

from 1 to 2.5 units of the syllabus, the second internal examination shall be conducted on 2.5 to 5 units. Five (5) marks are allocated for Assignments (as specified by the subject teacher concerned). The first Assignment should be submitted before the conduct of the first internal examination and second Assignment should be submitted before the conduct of the second internal examination. The total marks secured by the student in each internal examination are evaluated for 30 marks. The final marks secured in internal evaluation by each candidate are arrived at by giving a weightage of 70% to the best secured internal examination and 30% weightage to the least secured internal examination. A student who is absent from any assignment/ internal examination for any reason what so ever shall be deemed to have secured ‗zero' marks in the test/ examination and no makeup test/ examination shall be conducted.

3.4. For practical subjects there shall be a continuous evaluation during a semester for 25 sessional marks and 50 end semester examination marks. Out of 25 marks of internal evaluation, day-to-day work in the laboratory shall be evaluated for 15 marks and internal practical examination shall be evaluated for 10 marks conducted by the laboratory teacher concerned. The end semester examination shall be conducted with an external examiner and the laboratory teacher. The external examiner from other institutions or industry shall be appointed by the Controller of Examinations in consultation with Head of the Department.

3.5. For the subjects having design and / or drawing, (such as Engineering Graphics, AutoCAD, Engineering Drawing, Machine Drawing and Estimation etc.,) the internal evaluation carries 30 marks (the distribution is 15 marks for day-to-day work and 15 marks for internal examination) and 70 marks shall be for end semester examination. There shall be two internal examinations in a semester. The final marks secured by each candidate in the internal evaluation is arrived at by giving a weightage of 70% to the best secured internal examination and 30% weightage to the least secured internal examination.

3.6. There shall be a Mini-Project, to be taken up in the college of industry during the summer vacation after VI Semester examination. The mini project shall be evaluated during the VIII Semester. The mini project shall be submitted in a report form and should be presented before a committee, which shall be evaluated for 50 marks. The committee consists of Head of the Department, the supervisor of mini project, a senior faculty member of the department and an external examiner. There shall be no internal marks for Mini-project. The external examiner from other institutions or industry shall be appointed by the Controller of Examinations in consultation with Head of the Department.

3.7. There shall be a Seminar presentation in VIII Semester. For the Seminar, the student shall collect the information on a specialized topic other than the project topic and prepare a technical report and submit to the department. The presentation demonstrating understanding of the topic and technical report shall be evaluated by a Departmental committee consisting of the Head of the department, Seminar supervisor and a senior faculty member from the department. The seminar will be evaluated for 50 marks. There shall be no internal marks for the seminar.

3.8. There shall be a Comprehensive Viva-Voce in VIII Semester. The Comprehensive Viva-Voce will be conducted by a Committee consisting of the Head of the Department and three Senior Faculty members of the Department. The Comprehensive Viva-Voce is intended to assess the student‘s understanding in various subjects he studied during the B.Tech. course of study. The Comprehensive Viva-Voce is evaluated for 100 marks by the Committee. There shall be no internal marks for the Comprehensive Viva-Voce.

3.9. The **project work** shall be evaluated for 200 marks out of which 60 marks for internal evaluation and 140 marks for end-semester evaluation. The project work shall be taken up in the beginning

of VIII semester and shall be completed by the end of VIII semester. Internal evaluation shall be conducted by Head of the Department and the project supervisor for 60 marks. The end semester examination shall be based on the report submitted and a viva-voce exam for 140 marks by committee comprising of the Head of the Department, project supervisor and an external examiner. The external examiner shall be appointed by the Controller of Examinations from a panel of three members submitted by the Head of the Department.

4. Semester end Examination

4.1. Theory Courses

The end semester examination will be conducted for 70 marks which consists of Part-A and Part-B. The examination is of 3 hours duration. Question paper pattern is as follows

Part-A: 20 Marks

There shall be 10 questions each carrying 2 Marks. (Two questions from each Unit)

Part-B: 50 Marks

There shall be 10 questions out of which 5 questions (Internal choice within a unit i.e. two questions from each unit out of which one question from each unit to be answered) are to be answered, each question carry 10 marks.

4.2. Practical Courses

Each lab course is evaluated for 50 marks. The examination shall be conducted by the laboratory teacher. One examiner will be appointed by the Controller of Examinations from other institutions or industry in consultation with HOD.

4.3. Supplementary Examinations

The schedule for supplementary examinations shall be as notified by the institute from time to time.

5. Attendance Requirements

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

5.2. Condonation of shortage of attendance in aggregate up to 10% (65% and above and below 75%) in a Semester may be granted by the College Academic Committee. A student will not be permitted to write the end examination and not promoted to the next Semester unless he satisfies the attendance requirement of the present semester, as applicable.

5.3. Shortage of Attendance **below 65% in aggregate** shall in **No case be condoned.**

5.4. Students whose shortage of attendance is not condoned in any Semester are not eligible to take their end semester examination of that semester.

5.5. A stipulated fee shall be payable towards condonation of shortage of attendance.

5.6. A student who is short of attendance in a semester may seek re-admission into that semester when offered next within 4 weeks from the date of the commencement of class work.

5.7. A student will be promoted to the next semester if he satisfies the attendance requirement of the present semester including the days of attendance in sports, games, NCC and NSS activities. The consideration of attendance in such activities is restricted to a maximum of 15 instructional days in a semester. Prior permission of the Head of the Department in writing shall be obtained by the students to avail the attendance from above mentioned activities.

6. Minimum Academic Requirements

The following academic requirements have to be satisfied in addition to the attendance requirement mentions in item No.5.

6.1 A student is deemed to have satisfied the minimum academic requirements if he has earned the credits allotted to each theory/ practical design/drawing subject/project and secures not less than 35% of marks in the end semester exam, and minimum 40% of marks in the sum total of the internal and end semester examinations. A student shall obtain 40% of the marks in case of external evaluation alone.

6.2 Promotion of the student from first year to second year is not based on the credits secured and is subject to meeting the attendance criterion as specified in item No. 5

6.3 A student shall be promoted from II year to III year only if he fulfills the academic requirement of 34 credits up to III semester from all the examinations, whether or not the candidate takes the examination and secures prescribed minimum attendance in IV semester.

6.4 A Student shall be promoted from III year to IV year only if he fulfils the academic requirement of 56 credits up to V semester from all the examinations, whether or not the candidate takes the examinations and secures prescribed minimum attendance in VI semester.

6.5 A student shall register and put up minimum attendance in all 224 credits.

6.6. In addition to securing a minimum of 216 credits the student must complete the non credit courses. The non-credit courses awarded with a grade of satisfactory or not satisfactory based on meeting the minimum attendance requirement by the student.

6.7. Students who fail to earn a minimum of 216 credits as indicated in the course structure within ten academic years (8 year of study +2 years additionally for appearing for exams) from the year of their admission shall forfeit their seat in B.Tech. course and their admission stands cancelled.

7. Course pattern

7.1. The entire course of study is for four academic years and on semester pattern.

7.2. A student, eligible to appear for the end examination in a subject, but absent from it or has failed in the end semester examination, may write the exam in that subject during the period of supplementary exams.

7.3. When a student is detained for lack of credits/shortage of attendance, he may be re-admitted into the same semester when offered next. However, the academic regulations under which he was first admitted shall be applicable to him. After the revision of the regulations, the students of the previous batches will be given two chances for passing in their failed subjects, one supplementary and the other regular. If the students cannot clear the subjects in the given two chances, they shall be given equivalent subjects as per the revised regulations which they have to pass in order to obtain the required number of credits.

8. Award of Class:

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

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

9. Minimum Instruction Days

9.1. The minimum instruction days for each semester shall be 90**.**

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

9.3. The decision of the Institute Academic Committee will be final in respect of equivalent subjects for those students who are transferred from other colleges. The procedure for permitting students to transfer from other colleges will be decided by the principal / Institute Academic Committee keeping the Government Rules in view.

10. Withholding of Results

If the student has not paid dues to College, or if any case of indiscipline is pending against him, the result of the candidate may be withheld and he will not be allowed into the next semester. The award of the degree will be withheld in such cases.

11. Transitory Regulations

11.1. Discontinued, detained, or failed candidates are eligible for readmission as and when next offered.

11.2. After the revision of the regulations, the students of the previous batches will be given two chances for passing in their failed subjects, one supplementary and the other regular. If the students cannot clear the subjects in the given two chances, they shall be given equivalent subjects as per the revised regulations which they have to pass in order to obtain the required number of credits.

11.3. In case of transferred students from other Universities, the credits shall be transferred to as per the academic regulations and course structure of the college.

12. General

12.1. Wherever the words ―he‖,‖him‖, ―his‖ occur in the regulations, they include ―she‖, ―her‖, ―hers‖.

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

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

12.4. The Academic Council may change or amend the academic regulations or syllabi at any time and the changes or amendments made shall be applicable to all the students with effect from the dates notified by the college.

12.5. The students seeking transfer to colleges affiliated to JNTUH from various other Universities/ Institutions have to pass the failed subjects which are equivalent to the subjects of college, and also pass the subjects of college which the candidates have not studied at the earlier Institution on their own without the

right to sessional marks. Further, though the students have passed some of the subjects at the earlier institutions, if the same subjects are prescribed in different semesters of college, the candidates have to study those subjects in college even if they are repeated.

Academic Regulations R1 For B. Tech. (Lateral Entry Scheme)

Applicable for the students admitted into II year B.Tech (LES) from the Academic Year 2015-2016 and onwards

1. Eligibility for award of B.Tech. Degree (LES)

1.1. The LES candidates shall pursue a course of study for not less than three academic years and not more than six academic years.

1.2. After six academic years of course of study, a lateral entry student may be permitted to write the examinations for two more years.

1.3. The candidates shall register for 168 credits and secure a minimum of 160 credits from II to IV year B.Tech. Program (LES) for the award of B.Tech. Degree with compulsory subjects as listed in Table-1.

Table 1: Compulsory Subjects

S. No.	Subject Particulars
1	All practical subjects
2	Mini project
3	Comprehensive Viva- Voce
4	Seminar
5	Project work

1.4. The students, who fail to fulfil the requirement for the award of the degree in 8 consecutive academic years (6 years of study + 2 years only for appearing in the exams) from the year of admission, shall forfeit their seats.

1.5. The attendance regulations of B.Tech .(Regular) shall be applicable to B.Tech. (LES)

2. Promotion Rule

2.1. Promotion of the student from second year to third year is not based on the credits secured and is subject to meeting the attendance criterion as specified in item No. 1.5

2.2. A student shall be promoted from III year to IV year only if he fulfils the academic requirements of 34 credits up to V semester from all the examinations, whether or not the candidate takes the examinations and secures prescribed minimum attendance in VI semester.

3. Award of Class:

Method of awarding class shall be same that of the regular entry students.

4. All the other regulations as applicable to B.Tech. 4-year degree course (Regular) will hold good for B.Tech. (Lateral Entry Scheme)**.**

5. General

i. Where the words ―he‖, ―him‖, ―his‖, occur in the regulations, they include ―she‖, ―her‖, ―hers‖.

ii. The academic regulations should be read as a whole for the purpose of any interpretation.

iii. In the case of any discrepancy/ambiguity/doubt arises in the above rules and regulations, the decision of the College Academic Council shall be final.

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

MALPRACTICES RULES
DISCIPLINARY ACTION FOR
IMPROPER CONDUCT IN EXAMINATIONS

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

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

		semesters from class work and all end semester 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 college or organizes a walk out or instigates others **to** examination hall walk out, or threatens the officer- in-charge or any person on duty in or outside the examination hall of any injury**,** to his person or to any of his relations whether by words, either spoken or written or by signs or by visible representation, assaults the officer- in-charge, or any person on duty in or outside the examination hall or any of his relations, or indulges in any other act of misconduct or mischief which result in damage to or destruction of property in the 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 of the script or any part thereof inside or outside the examination hall.	Expulsion from the examination hall and cancellation of performance in that subject and all the other subjects the candidate has already appeared including practical examinations and project work and shall not

		be permitted for the remaining examinations of the subjects of that semester/year. The candidate is also debarred for two consecutive semesters from class work and all University examinations. The continuation of the course by the candidate is subject to the academic regulations in connection with forfeiture of seat.
8.	Possess any lethal weapon or firearm in the examination hall.	Expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester/year. The candidate is also debarred and forfeits the seat.
9.	If student of the college, who is not a candidate for the particular examination or any person not connected with the college indulges in any malpractice or improper conduct mentioned in clause 6 to 8.	If the student belongs to the college, expulsion from the examination hall an cancellation of performance in that subject and all other subjects hall and all other subjects that candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester/year. The candidate is also debarred and forfeits the seat. Person(s) who do

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

Malpractices identified by squad or special invigilators

Punishments to the candidates as per the above guidelines.

Malpractice identified at Spot center during valuation

The following procedure is to be followed in case of malpractice cases detected during valuation, scrutiny etc. at spot center.

1) Malpractice is detected at the spot valuation. The case is to be referred to the malpractice committee. Malpractice committee will meet and discuss/question the candidate and based on the evidences, the committee will recommend suitable action on the candidate.
2) A notice is to be served to the candidate(s) involved through the

Principal to his address and to the candidate(s) permanent address regarding the malpractice and seek explanations.

3) The involvement of staff who are in charge of conducting examinations, invigilators valuing examination papers and preparing / keeping records of documents relating to the examinations in such acts (inclusive of providing incorrect or misleading information) that infringe upon the course of natural justice to one and all concerned at the examinations shall be viewed seriously and recommended for award of appropriate punishment after thorough enquiry.

4) Based on the explanation and recommendation of the committee, action may be initiated.

5) **Malpractice committee:**

i.	Controller of Examinations	Chairman
ii.	Assistant controller of Evaluation	Member
iii.	Chief Examiner of the subject/ subject expert	Member
iv.	Concerned Head of the Department	Member
v.	Concerned Invigilator	Member

CMR COLLEGE OF ENGINEERING AND TECHNOLOGY
(Autonomous.)

DEPARTMENT OF CSE

Institute Vision

To be a premier academic institution striving continuously for excellence in technical education, research and technological service to the nation

Institute Mission

- Create and sustain a community of learning in which students acquire knowledge and learn to apply it professionally with a concern for the society.
- Pursue and disseminate research findings and offer knowledge-based technological services to satisfy the needs of society and the industry.
- Promote professional ethics, leadership qualities and social responsibilities.

Vision of the Department

To evolve as a centre of academic excellence in computer science & engineering by building strong teaching & research environment

Mission of the Department

- To offer high quality graduate and post graduate programs in computer science education and to prepare students for professional career and/or higher studies globally.
- To promote excellence in research & consultancy in related disciplines.
- To develop self learning abilities and professional ethics to serve the society.

Program Educational Objectives

PEO I. Excel in professional career and/or higher education by acquiring knowledge in Computer Science including mathematics and basic engineering principles.

PEO II Exhibit skills to function as member of multi-disciplinary teams, communicate effectively and be conversant with modern tools.

PEO III Practice the profession with ethics, social responsibilities and exhibit leadership qualities.

Program Outcomes (POs)

1. An ability to apply knowledge of Science, Mathematics, Engineering & Computing fundamentals for the solutions of Complex Engineering problems
2. An ability to Identify, formulate, research literature and analyze complex engineering problems using first principles of mathematics and engineering sciences.
3. An ability to design solutions to complex process or program to meet desired needs
4. Ability to use research-based knowledge and research methods including design of experiments to provide valid conclusions.
5. An ability to use appropriate techniques, skills and tools necessary for computing practice.
6. Ability to apply reasoning informed by the contextual knowledge to assess social issues, consequences & responsibilities relevant to the professional engineering practice.
7. Ability to understand the impact of engineering solutions in a global, economic, environmental, and societal context with sustainability
8. An understanding of professional, ethical, social issues and responsibilities.
9. An ability to function as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.
10. An ability to communicate effectively on complex engineering activities within the engineering community
11. Ability to Demonstrate and understanding of the engineering and management principles as a member and leader in a team.
12. Ability to engage in independent and lifelong learning in the context of technological change.

CMR COLLEGE OF ENGINEERING & TECHNOLOGY,
(AUTONOMOUS)

B.Tech (Computer Science & Engineering)
Course Structure

Subject Code	Subject	L	T	P	C
A1001	English- I	2	0	0	2
A1006	Linear Algebra & Calculus	4	1	0	4
A1007	Advanced Calculus	4	1	0	4
A1013	Engineering Physics-I	4	0	0	4
A1016	Engineering Chemistry	4	0	0	4
A1501	Computer Programming through 'C'	4	1	0	4
A1542	Computer Programming Lab	0	0	3	2
A1019	Engineering Chemistry Lab	0	0	3	2
A1003	English Language Communication Skills Lab	0	0	3	2
	Total Credits				**28**

II Semester					
Subject Code	**Subject**	**L**	**T**	**P**	**C**
A1002	English - II	2	0	0	2
A1008	Mathematical Methods	4	1	0	4
A1014	Engineering Physics-II	3	0	0	3
A1017	Advanced Engineering Chemistry	3	0	0	3
A1502	Data Structures through 'C'	4	1	0	4
A1306	Engineering Drawing	3	0	3	4
A1543	Data Structures Lab	0	0	3	2
A1015	Engineering Physics Lab	0	0	3	2
A1544	IT Workshop	0	0	3	2
A1303	Engineering Workshop	0	0	3	2
	Total Credits				**28**

III Semester					
Subject Code	**Subject**	**L**	**T**	**P**	**C**
A1503	Mathematical Foundations of CS	4	0	0	4
A1504	Advanced Data Structures through C++	4	1	0	4
A1020	Environmental Studies	4	0	0	4
A1505	Computer Organization	4	1	0	4
A1443	Digital Logic Design	4	1	0	4
A1244	Basic Electrical & Electronics	4	1	0	4
A1245	Electrical & Electronics Lab	0	0	3	2
A1545	Advanced Data Structures through C++ Lab	0	0	3	2
A1005	Soft Skills & Professional Ethics	2	0	0	0
	TOTAL				**28**

IV Semester					
Subject Code	**Subject**	**L**	**T**	**P**	**C**
A1010	Probability & Statistics	4	0	0	4
A1506	Computer Networks	4	1	0	4
A1507	Formal Languages & Automata Theory	4	1	0	4
A1508	Operating Systems	4	0	0	4
A1509	Database Management Systems	4	1	0	4
A1554	JAVA Programming	4	1	0	4
A1546	Java Programming Lab	0	0	3	2
A1547	DBMS Lab	0	0	3	2
	TOTAL				**28**

DETAILED SYLLABUS
B.TECH(CSE)

(A1001)ENGLISH-I

L T P C 2 0 0 2

B. Tech (CE) - I Semester

GENERAL OBJECTIVES:

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

SKILLS-WISE OBJECTIVES:

Listening Skills:

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

Speaking Skills:

- To make students aware of the role of speaking in English and its contribution to their success.
- To enable students to express themselves fluently and appropriately in social and professional contexts.

Reading Skills:

- To develop an awareness in the students about the significance of silent reading and comprehension.
- To develop the ability of students to guess the meanings of words from context and grasp the overall message of the text, draw inferences etc.

Writing Skills :

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

UNIT –I:

- Chapter entitled ‗Wit and Humour' from ‗Skills Annexe' - Functional English to Success Published by Orient Black Swan, Hyderabad.
  - L-Listening For Sounds, Stress and Intonation
  - S-Greeting and Taking Leave, Introducing Oneself and Others (Formal and Informal Situations)
  - R- Reading for Subject/ Theme
  - W- Writing Paragraphs
  - G-Types of Nouns and Pronouns
  - V- Homonyms, homophones synonyms, antonyms

UNIT –II

- Chapter entitled ‗Mokshagundam Visvesvaraya' from ―Epitome of Wisdom‖, Published by Maruthi Publications, Hyderabad.
  - L-Conversations – Introducing each other, Talking about a course.
  - S- Opinion based questions
  - R- Reading for Subject/ Theme - The Palm island
  - W- Writing Paragraphs
  - G- Joining ideas by conjunctions, Adverbs
  - V- Prefixes and suffixes

UNIT –III

- Chapter entitled ―Cyber Age‖ from ―Skills Annexe -Functional English for Success‖ Published by Orient Black Swan, Hyderabad.
  - L – Listening for themes and facts
  - S – Apologizing, interrupting, requesting and making polite conversation
  - R- Reading for theme and gist
  - W- Describing people, places, objects, events
  - G- Verb forms
  - V- noun, verb, adjective and adverb

UNIT –IV

- Chapter entitled ‗Three days To See' from ―Epitome of Wisdom‖, Published by Maruthi Publications, Hyderabad.
  - L – Conversations – Planning for an outing
  - S – Debate
  - R- ‗Physically challenged athletes
  - W- Report writing
  - G- Expressing yourself with modal auxiliary verbs
  - V- Collective nouns – Synonyms, Prefixes

UNIT –V

- Chapter entitled ‗The Last Leaf' from ―Epitome of Wisdom‖, Published by Maruthi Publications, Hyderabad
  - L -Listening for specific details - ‗Speech on Environmental conservation'
  - S- Group Discussions - narrating, expressing opinions
  - R –Choose how to start your day
  - W- Writing a Précis
  - G- Relating objects by using prepositions, Ergative verbs
  - V- Vocabulary - idioms

TEXTBOOKS :

1. A Text book entitled **"Skills Annexe", -Functional English to Success** Published by Orient Black Swan, Hyderabad
2. A text book entitled, **"Epitome of Wisdom",** Published by Maruthi Publications, Hyderabad.

REFERENCES:

1. Contemporary English Grammar Structures and Composition by David Green, MacMillan Publishers, New Delhi. 2010.
2. Innovate with English: A Course in English for Engineering Students, edited by T Samson, Foundation Books.
3. English Grammar Practice, Raj N Bakshi, Orient Longman.
4. Technical Communication by Daniel Riordan. 2011. Cengage Publications. New Delhi.
5. Effective English, edited by E Suresh Kumar, A Rama Krishna Rao, P Sreehari, Published by Pearson
6. Handbook of English Grammar& Usage, Mark Lester and Larry Beason, Tata McGraw –Hill.
7. Spoken English, R.K. Bansal & JB Harrison, Orient Longman.
8. Technical Communication, Meenakshi Raman, Oxford University Press
9. Objective English Edgar Thorpe &Showick Thorpe, Pearson Education
10. Grammar Games, Renuvolcuri Mario, Cambridge University Press.
11. Murphy's English Grammar with CD, Murphy, Cambridge University Press.
12. Everyday Dialogues in English, Robert J. Dixson, Prentice Hall India Pvt Ltd.,
13. ABC of Common Errors Nigel D Turton, Mac Millan Publishers.
14. Basic Vocabulary Edgar Thorpe & Showick Thorpe, Pearson Education
15. Effective Technical Communication, M Ashraf Rizvi, Tata McGraw – Hill.

16. An Interactive Grammar of Modern English, Shivendra K. Verma and HemlathaNagarajan , Frank Bros & CO
17. A Communicative Grammar of English, Geoffrey Leech, Jan Svartvik, Pearson Education
18. Enrich your English, Thakur K B P Sinha, Vijay Nicole Imprints Pvt Ltd.,
19. A Grammar Book for You And I, C. Edward Good, MacMillan Publisher

Course outcomes:

By the end of the course students will be able to:

1. Realize why humour and wit are important in our daily lives and share their anecdotes
2. Read and appreciate how scientific inventions have transformed our lives.
3. Debate on the issue of preferring to serve their country or go abroad to serve foreign countries.
4. Write coherently about the role of Visvesvaraya as a true patriot and as an excellent engineer in solving complex, social problems.
5. Apologize, interrupt, request and make polite conversation using appropriate language

(A1006) LINEAR ALGEBRA & CALCULUS

L T P C 4 1 0 4

B.Tech (CSE) - I Semester

Objectives

- Obtain and understand formation and solutions of matrices. Solution of linear system through matrices.
- Learn to find Eigen values, Eigen vectors, usage of Cayley-Hamilton Theorem. Understanding real & complex matrices and reduction to Canonical form.
- A through treatment of sequences and series.
- Develop the skills pertinent to the practice of mathematics (including the students) to formulate problems. Understand the concepts of limits and continuous functions.
- Identify major characteristics of graphs and relate them to first and second derivatives. Find areas of bounded regions using methods of integrations.

Unit-I: Linear Algebra-I

Matrices and Linear System of Equations: Real matrices :- Symmetric, Skew-symmetric, Orthogonal, Linear Transformation- Orthogonal Transformation. Complex matrices: Hermitian, Skew- Hermitian and Unitary. Elementary row transformations- Rank – Echelon form, Normal form- Solution of Linear System – Direct Methods (Gauss Elimination, Gauss Jordan)-LU-Decomposition.

Unit-II: Linear Algebra-II

Eigen Values, Eigen Vectors- Properties, Cayley –Hamilton Theorem (without proof) – Inverse and Powers of a matrix by cayley-Hamilton theorem- Diagonolization of matrix.Calculation of Powers of matrix-Modal and spectral matrices. Quadratic forms- Reduction of quadratic form to canonical form-rank- positive , Negative definite-semi definite-Index-Signature.

Unit-III: Sequences – Series

Basic definitions of Sequences and Series- Convergence and divergence – Comparison test- Ratio test – Integral test- Cauchy‘s root test- Raabe‘s Test – Absolute and Conditional Convergence .

Unit-IV: Functions of Single& Several Variables

Rolle‘s theorem –Lagrange‘s Mean value Theorem – Cauchy‘s Mean value theorem- Generalized Mean value theorem(all theorems without proofs) Functions of Several Variables- Functional dependence –Jacobian-Maxima and Minima of functions of two variables with constraints and without constraints.

Unit-V: Applications of Single Variable & Multiple Integrals

Radius, Centre and Circle of Curvature- Evolutes and Envelopes. Multiple integrals – double integral – Change of variables – Change of order of integration and Triple integrals.

TEXT BOOKS

1. Kreyszig‘s Engineering Mathematics – I by Dr. A. Ramakrishna Prasad,2014yr Edition John Wiley Publications.
2. Advanced Engineering Mathematics by R.K. Jain &S.R.K. Iyengar, 3rd edition, Narosa Publishing House, Delhi.

REFERENCE BOOKS

1. Advanced Engineering Mathematics by Kreyszig, 8th Edition, John Wiley & Sons Publishers
2. Higher Engineering Mathematics by B.S. Grewal, 36th Edition, Khanna Publishers.
3. Advanced Engineering Mathematics with MATLAB, Dean G. Duffy, 3rd Edi, CRC Press Taylor & Francis Group.
4. Mathematics for Engineering and Scientists. Alan Jeffrey, 6th Edi, 2013, Chapman & Hall / CRC
5. Engineering Mathematics – I by T.K.V. Iyengar, B. Krishna Gandhi & Others, 2013 Yr. EditionS.Chand.
6. Engineering Mathematics – I by D.S. Chandrasekhar, Prison Books Pvt. Ltd.
7. Engineering Mathematics – I by G. Shanker Rao& Others I.K. International Publications.

Course Outcomes

- The students will be able to solve linear system by using various methods of matrices.

- The students will be able to find eigen values, eigen vectors and diagonalization of a square matrix. Finding the nature of real and complex matrices by reducing to Canonical form.
- The students will be able to determine when a series converges both from definition and the Cauchy criterion. Be able to use the standard convergence tests for series to determine if a particular series convergence.
- The students will be able to verify mean value theorems and they can find maximum and minimum for multiple variable functions.
- The students will be able to calculate the volumes of solids, the length of arcs and the surface area; perform polar-to-rectangular and rectangular-to-polar conversions.

(A1007) ADVANCED CALCULUS

L T P C 4 1 0 4

B.Tech (CSE) - I Semester

Objectives:

1. Solve Differential Equations of first order using various methods and their applications.
2. Solve Differential Equations of multiple orders using various methods and their applications.
3. Possible to transform from one form another form by using Laplace Transforms (Used in Signals and systems).
4. In the diverse fields like electrical circuits, electronic communication, mechanical vibration and structural engineering, periodic functions naturally occur and hence their properties are very much required.
5. Choose coordinate systems (polar, spherical, cylindrical, rectangular) appropriate to a given problem.

Unit-I: Differential equations of first order and their applications

Over view of Differential equations – exact, Linear and Bernoulli's. Applications to Newton's Law of cooling, Law of Natural growth and decay, Orthogonal trajectories.

Unit-II: Higher order Linear differential equations and their applications

Linear differential equations of second and higher order with constant and variable coefficients.RHS term of the type $f(x) = e^{ax}.\sin ax.\cos ax and x^n.e^{ax}V(x).x^nV(x).$ method of variation of parameters. Applications to bending of beams, Electrical circuits, Simple harmonic motion.

Unit-III: Laplace Transform and its applications to Ordinary Differential Equations

Laplace transform of standard functions – Inverse transform- First Shifting theorem, Transforms of derivatives and integrals – Unit step function – Second Shifting theorem – Dirac's delta function- Convolution theorem – Periodic function – Differentiation and integration of transforms – Application of Laplace transforms to ordinary differential equations.

Unit-IV: Fourier Series

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

Unit-V: Vector Calculus

Vector Differential Calculus: Scalar & vector point functions, Gradient – Divergence – Curl with Physical interpretation. Directional derivatives, Vector differential operators & their related properties.

Vector Integral Calculus: Line integral – Work done – scalar potential function, surface integrals – Flux of Vector valued function, Volume integrals.

Vector integral theorems: Gauss's Divergence theorem, Green's theorem, Stoke's Theorem (Statements and their verification).

Text Books :

1. Kreyszig's Engineering Mathematics – I by Dr. A. Ramakrishna Prasad, 2014yr Edition John Wiley Publications.
2. Advanced Engineering Mathematics by R.K. Jain &S.R.K. Iyengar, 3rd edition, Narosa Publishing House, Delhi.

References :

1. Differential Equations with Applications & Historical Notes by George F Simmons, 2nd Edi ,Tata Mc.graw Hill Publishing Co Ltd.
2. Kreyszig's Mathematical Methods by Dr. A. Ramakrishna Prasad, 1st Edition John Wiley Publications.
3. Advanced Engineering Mathematics by Kreyszig, 8th Edition, John Wiley & Sons Publishers
4. Higher Engineering Mathematics by B.S. Grewal, 36th Edition, Khanna Publishers.
5. Advanced Engineering Mathematics with MATLAB, Dean G. Duffy, 3rd Edi, CRC Press Taylor & Francis Group.
6. Mathematics for Engineering and Scientists. Alan Jeffrey, 6th Edi, 2013, Chapman & Hall / CRC
7. Engineering Mathematics – I by T.K.V. Iyengar, B. Krishna Gandhi & Others, 2012 Yr. Edition S. Chand.
8. Engineering Mathematics – I by D.S. Chandrasekhar, Prison Books Pvt. Ltd.
9. Engineering Mathematics – I by G. Shanker Rao& Others I.K. International Publications.

Outcomes:

1. The students will be able understand the formation and evaluation of different differential equations by various methods.
2. The students will be able to analyze certain physical problems (tank flow, mechanical and electrical vibration), determining differential equations, solve them using the techniques to answer questions about the physical system.
3. The students will be able to solve linear, simultaneous equations to analyze voltages and currents in AC to DC (phase) circuits. Determine the average power dissipated in a circuit. Calculate voltages and currents in single phase circuit.
4. The students will be able to find the expansion of a given function by Fourier series of the function.
5. The students will be able to evaluate multiple integrals (line, surface, volume integrals) and convert line integrals to area integrals and surface integrals to volume integrals.

(A1013)ENGINEERING PHYSICS-I

L	T	P	C
4	0	0	4

B.Tech(CSE) - I Semester

Objectives:

- To understand the phenomenon of interference, diffraction and polarization of light.
- To understand the bonding and structural properties of the crystals and their study using X-ray diffraction techniques.
- To understand the origin of different crystal defects and the basics of statistical mechanics.
- To understand the classical, quantum approach to explain the electrical properties of solids and also band theory of solids.
- To understand the properties of semi-conductors materials.

UNIT-I

Optics: Interference: Introduction, interference in thin films (reflected light), Newton rings.

Diffraction: Introduction, Fraunhofer diffraction due to single slit, double slit and N-slits, diffraction grating experiment, Rayleigh criterion and resolving power of grating.

Polarization : Introduction, Malus law, Brewster‘s law, double refraction, construction and working of Nicol‘s prism, polaroids, quarter wave and half wave plates.

UNIT-II

Crystallography: Ionic bond, covalent bond, metallic bond, hydrogen bond, Vander-Waal's bond, calculation of cohesive energy of ionic crystal, space lattice, unit cell, lattice parameters, seven crystal systems, Bravais lattices, atomic radius, co-ordination number and packing factors of SC, BCC, FCC structures, structures of CsCl, NaCl and diamond.

Crystal planes and directions: Miller indices, inter planar spacing of orthogonal crystals

X-ray Diffraction: Bragg's law, X- ray diffraction methods: powder method, applications of X- ray diffraction.

UNIT-III

Defects in Solids: Point defects: vacancies, substitutional impurities, interstitial impurities, Frenkel and Schottky defects, qualitative treatment of line defects(edge and screw dislocations), Burger's vector, surface defects.

Statistical Mechanics: Maxwell-Boltzman, Bose-Einstein and Fermi-Dirac statistics (qualitative treatment), concept of electron gas, density of states, Fermi distribution function - the effect of temperature on the distribution and Fermi energy.

UNIT-IV

Principles of Quantum Mechanics: Waves and particles, de-Broglie hypothesis, matter waves, Davisson and Germer's experiment, G.P. Thomson experiment, Heisenberg's uncertainity principle, Schrödinger's time independent wave equation - physical significance of the wave function – infinite square well potential.

Band Theory of Solids: Assumptions of classical and quantum free electron theory of metals and their limitations, origin of energy band formation in solids ,electron in a periodic potential: Bloch theorem, Kronig- Penny model (qualitative treatment), E-K curve, concept of effective mass of an electron, classification of materials into conductors, semiconductors & insulators.

UNIT-V

Semiconductor Physics: Introduction, Fermi level in intrinsic and extrinsic semiconductors, calculation of carrier concentration in intrinsic and extrinsic semiconductors, direct & indirect band gap semiconductors, Hall effect.

Physics of Semiconductor Devices: Formation of PN junction, open circuit PN junction, energy diagram of PN junction diode, diode equation, I-V Characteristics of PN junction diode, LED photo diode and solar cell.

TEXT BOOKS:

1. Engineering Physics by PK PalaniSamy, SciTechPublications.
2. Applied Physics for Engineers by Dr.P.MadhusudanaRao, Academic Publishing Company.
3. Solid State Physics by S.O.Pillai (Main edition) – New Age Publishers.

REFERENCES:

1. Fundamentals of Physics, David Halliday, Robert Resnick, Jearl Walker by John Wiley & Sons
2. Introduction to Solid State Physics – C. Kittel (Wiley Eastern).
3. Modern Physics by K. Vijaya Kumar, S. Chandralingam, *S*. Chand & Co.
4. Engineering Physics by R.K.Gaur and S.L.Gupta; DhanpatRai and Sons.

Course Outcomes:

- The student is able to understand the properties of light propagation and interaction of light with matter, such interference, diffraction and polarization of light.
- The student is able to understand the different types of bonding in solids and how they are classified in to different crystal groups.
- The student is able to classify the crystal defects on the basis of their geometry. They can also understand different statistical distribution methods.
- The student is able to explain why the classical theory and quantumtheory failed to explain the electrical properties of solids and how the band theory overcomes these failures.
- The student is able to understand various properties of semi-conducting materials.

(A1016)ENGINEERING CHEMISTRY

L T P C 4 0 0 4

B.Tech(CSE) - I Semester

Objectives:

- Knowledge of purification techniques and various applications of soft water in industries.
- Understand electrochemistry which deals with the utilization of electrical energy of an external source for bringing about a physical or chemical change.
- Knowledge of ―Corrosion engineering education‖ and Usage of polymers in modern world as an integral part of every human‘s life.
- Provide practices for the prevention for corrosion
- The course provides a comprehensive survey of the concepts involved in the study of phase and chemical equilibrium.

UNIT I

Water Technology: Sources of water – Impurities in water – Hardness of water – Temporary and Permanent Hardness – Units. Estimation of temporary and permanent hardness of water – EDTA method; Numerical problems; Potable Water treatment – Specifications; Steps involved in treatment - Sedimentation – Coagulation – Filtration – Sterilisation – Desalination of Brackish Water – Reverse Osmosis and Electro dialysis. Industrial water treatment – Boiler Troubles – Scales and Sludges ; Caustic Embrittlement; Boiler Corrosion; Priming and Foaming. Hot lime and Cold lime soda process ; Numerical Problems; Zeolite Process and Ion Exchange Process. Internal conditioning methods like – Phosphate, Carbonate ,Calgon, Colloidal, Radioactive, Electrical and Sodium aluminate conditioning.

UNIT II

Battery Technology: Electrode Potential – Determination of Single Electrode Potential;galvanic cells; Primary Cell – Dry or Leclanche Cell,Daniel cell, Secondary Cell – Lead acid storage Cell ; Ni – Cd batteries, , Fuel Cell – Hydrogen- Oxygen Fuel Cell. Methanol – Oxygen fuel cell.

UNIT III

Corrosion and its Control: Causes and effects of corrosion. Theories of Corrosion – Chemical & Electrochemical corrosion; Types of corrosion (Galvanic, Waterline, Pitting and Inter- granular); Pilling bed-worth Rule. Factors affecting rate of corrosion – Nature of metal and Nature of Environment – Corrosion control methods – Cathodic protection (sacrificial anodic and Impressed current).

UNIT IV

Protective Coatings: Surface coatings: Metallic coatings & methods of application of metallic coating – Hot dipping (Galvanization & Tinning); Cementation, Metal Cladding; Electroplating (copper plating); Electroless plating (Ni Plating); Organic coatings – Paints – Constituents and their functions. Varnishes, Enamels& Lacquers.

UNIT V

Phase Rule: Definitions of terms - Phase, Component and Degree of Freedom. Phase Rule Equation. Phase diagrams – One Component System – Water System; Two Component System – Silver- Lead System; Cooling Curves. Iron – Carbon Phase Diagram; Heat treatment of steel. Hardening.Annealing, and Normalizing.

Text Books;

1. Engineering chemistry by B.Rama Devi & Ch. VenkataRamana Reddy; Cengage Learning, 2012
2. Engineering Chemistry by P.C.Jain and M.Jain, DhanapatRai& Sons
3. Engineering chemistry by Dr.Bharathikumari,Dr.Jyotsna
4. Engineering chemistry by Thirumalachary, E.Laxminyarana, SCITECHPublicationa(India) p ltd

References:

1. A Textbook of Engineering Chemistry, S.S.Dara, S.Chand& Co.
2. A Textbook of Engineering Chemistry, SashiChawla, DhanapathRai& Sons
3. Engineering Chemistry, B.K.Sharma Et al

Outcomes:

At the end of the course student will be able to

- Benefits of treated water as source in steam generation and other fields like production of steel, paper, textiles, atomic energy etc.

- Analyze& describe how electrochemical concepts can be used in various practical applications, like batteries ,fuel cells etc.
- Apply knowledge of corrosion science to problems in materials engineering.
- Prevention of corrosion of metals and applications of polymers from domestic articles to sophisticated scientific and medical instruments.
- Develop chip level alloys by applying phase rule.

(A1501)COMPUTER PROGRAMMING THROUGH C

L T P C 4 1 0 4

B.Tech(CSE) - I Semester

Objectives:

1. Understand computer basic's, algorithms, flowcharts and write simple _C' programs, data types and operators and Console I/O functions.

2. Understand Decision making statements and loops.

3. Understand the concepts of functions and pointers.

4. Understand the concepts of strings and various string handling functions and Arrays.

5. Understand the concepts related to structures and able to differentiate between structure and union, Storing of large data using files.

UNIT – I

Introduction to Computers- Elements of computer processing, Hardware and software, Computing Environments, Computer Languages, SDLC ,Problem solving-algorithms , Pseudo code, and flowcharts.

Introduction to C Language- History, Structure of a C program, Simple C Program, Compilation process (program development).Identifiers, Data Types, Variables, Constants, Console I/O (printf, scanf), Operators – Arithmetic, Relational, Logical, Conditional, Increment/decrement etc, Expressions, Precedence and Associativity, Expression Evaluation, Type conversions, pre-processor directives, Simple C Programming examples.

UNIT-II

Decision Statements and loops- Introduction, IF statement- (Simple IF Statement, the IF ELSE Statement, Nesting of IF ELSE Statements, The ELSE IF Ladder), Switch Statement, Repetition statements – (for, While, do-while), Jump statements, Simple C Programming examples.

UNIT-III

Functions: Defining functions, user defined functions, Standard functions, inter function communication, Passing arguments to functions, Returning values from functions, function calls, Reference arguments, Variables and

storage classes, recursion- recursive functions, Limitations of recursion, example C programs, Command line arguments.

Pointers – Introduction (Basic Concepts), Pointers for inter function communication, pointer to pointer, compatibility, Dynamic Memory Allocation, programming applications, pointers to void, pointer to functions.

UNIT-IV

Arrays – Concepts, using arrays in C, inter function communication, array applications, two – dimensional arrays, multidimensional arrays, C program examples, Arrays and Pointers, Pointer Arithmetic and arrays, Passing an array to a function, array of pointers.

Strings – Concepts, C Strings, String Input / Output functions, arrays of strings, string manipulation functions, string / data conversion, C program examples.

UNIT-V

Structures and Union: Declaring and initializing a structure, Accessing the members of a structure, Nested structures, self referential structures, Array of structures, Using structures in functions, Pointers and structures, Declaring and initializing a union. Enumerated types, typedef, bit fields.

Files- Concept of a file, streams, text files and binary files, Differences between text and binary files, Modes of a file, Opening and Closing files, file input / output functions (standard library input / output functions for files), file status functions (error handling), Positioning functions, C program examples.

Text Books:

1. C programming A Problem-Solving Approach by Behrouz A.Forouzan, E.V.Prasad, Richard F. Gilberg C How to Program Paul Deitel and Harvey Deitel, PH.

2. Computer Programming and Data Structures by E Balagurusamy, Tata McGraw Hill.

Reference Books

1.Kanetkar Yashavant, Let Us C, BPB.

2.The C Programming Language by Brain W.Kernighan, Dennis M.Ritchie.

3. Programming in C, 2/e By Ashok Kamthane.

4. Absolute beginner's guide to C, Greg M. Perry, Edition 2, Publisher: Sams Pub., 1994.
5. Schaum's Outline of Programming with C by Byron S. Gottfried,1996

Electronic Materials, Websites

- http://en.wikiversity.org/wiki/Topic:C
- www.cprogramming.com

Outcomes:

1. Understand the algorithms, flowcharts implementation of simple _C' programs, data types and operators and Console I/O functions.
2. Implement the decision control statements, loop control statements and case control statements.
3. Declare and implement the pointers and functions.
4. Declare and implement the arrays and strings.
5. Understand the structures declaration, initialization and implementation, understand the file operations, Character I/O, String I/O, File pointers and importance of pre-processor directives.

(A1542)COMPUTER PROGRAMMING LAB

L T P C 0 0 3 2

B.Tech(CSE) - I Semester

Objectives:

1. To understand the various steps in program development.
2. To understand the basic concepts in C Programming Language.
3. To understand different modules that includes conditional and looping expressions.
4. To understand how to write modular and readable C Programs.
5. To write programs in C to solve problems using arrays, structures and files.

	WEEK WISE PROGRAMS
Week1	(a)Write a simple C program to Print ―Hello World‖ (b) Write a simple C program Declaring Variable and Printing its Value (c) Write a simple C Program to Calculate Area and Circumference of Circle (d)Write a simple C program to implement basic arithmetic operations - sum, difference, product, quotient and remainder of given numbers.
Week 2	Write C programs to demonstrate the following operators (a) Assignment Operator. (b) Relational and Logical Operator. (c) Increment and decrement operator. (d) Bitwise operators. (e) Ternary operator.
Week3	(a) Write a C programs - to find the largest and smallest of 2 numbers(if – else), to find the largest and smallest of 3 numbers(Nested if – else), roots of quadratic equation(else – if ladder). (b)The total distance travelled by vehicle in _t‘ seconds is given by distance=ut+1/2at^2 where _u‘ and _a‘ are the initial velocity and acceleration. Write a C program to find the distance travelled at regular intervals of time given the Values of ‘u‘ and _a‘. The program should provide the flexibility to the user to select his own time intervals and

	repeat the calculations for different values of ‗u' and ‗a'. (c)Write a C program, which takes two integer operands and one operator from the user, performs the operation and the prints the result. (consider the operators +,-,*,/,% and use switch statement).
Week4 (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. (c) Write a C program to generate all the prime numbers between 1 and n, where n is a value supplied by the user.
Week5 (a)	Write a C program to read two numbers, x and n, and then compute the sum of this geometric progression: $1+x+x^2+x^3+\ldots\ldots\ldots\ldots+x^n$ (b) Write a C program to generate Pascal's triangle. (c) Write a C program to construct a pyramid of numbers
Week6 (a)	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 of two given integers.
Week7 (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.
Week8 (a)	Write a C program that uses functions to perform the following operations: (i)To insert a sub-string in 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
Week9 (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 .
week10	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.)
week11	(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).
week12	(a) Write a C programme to display the contents of a file. (b) Write a C programme 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)

Outcomes

- Basics of C programming, Usage of various operators
- Ability to develop programs on strings and usage of functions
- Ability to develop programs on files

(A1019)ENGINEERING CHEMISTRY LAB

L T P C 0 0 3 2

B.Tech(CSE) - I Semester

OBJECTIVES:

- Estimation of hardness of water is essential for drinking water and in industries to avoid boiler troubles.
- Knowledge of instrumentation in conductometer, potentiometer, colorimeter and pH meter.
- Knowledge of preparation ofAspirin and Thiokol rubber
- Knowledge of physical properties of chemical compounds
- To gain the knowledge on existing devices, materials .

I. **Inorganic chemistry experiments by Analytical methods:**

Water Analysis:

1.Estimation of Hardness of water by EDTA method

2. Estimation of Alkalinity of water.

II. Instrumentation:

3. Estimation of Copper by colorimetric Method.
4. Conductometric Titration of a strong acid vs a strong base
5. Potentiometric Titration of a strong acid vs a strong base

III. Identification and preparation of organic compounds:

6. Preparation of Aspirin
7. Preparation of Thiokol Rubber

IV. Physical chemistry experiments:

8. Determination of Viscosity of a Liquid.
9. Determination of Surface Tension of a liquid.
10. Adsorption of acetic acid on activated charcoal
11. Determination of melting point and Boiling point of given solids and liquids

V. Cement Analysis:

12. Determination of Ferric iron in cement by Colorimetry

REFERENCES:

1. Practical Engineering Chemistry- K Mukkanti, BS Publications.
2. Practical Engineering Chemistry – B. Ramadevi, Ch.V. Ramana Reddy, Cengage Learning.

Course outcomes:

At the end of the course the student will be able to

- To understand the extent of hardness range present in water sample and its consequences if used for various industrial operations
- Able to prepare drugs like Aspirin and polymers like Thiokol rubber
- Able to determine the strength of solutions ,p^H of various solutions
- Able to determine the viscosity and surface tension of liquids
- Able to perform conductometric and potentiometric titrations
- Have a knowledge on the principles of adsorption phenomenon.

(A1003)ENGLISH LANGUAGE COMMUNICATION SKILLS LAB

L T P C 0 0 3 2

B.Tech (CSE) - I Semester

Introduction:

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

Objectives:

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

Syllabus:

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

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

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

Exercise – I

- **CALL Lab**: Introduction to Phonetics – Speech Sounds – Vowels and Consonants
- **ICS Lab**: Ice-Breaking activity and JAM session Articles, Prepositions, Word formation- Prefixes & Suffixes, Synonyms & Antonyms

Exercise – II

- **CALL Lab:** Structure of Syllables - Past Tense Marker and Plural Marker – Weak Forms and Strong Forms - Consonant Clusters.
- **ICS Lab:** Situational Dialogues – Role-Play- Expressions in Various Situations – Self-introduction and Introducing Others – Greetings – Apologies – Requests – Social and Professional Etiquette - Telephone Etiquette. Concord (Subject in agreement with verb) and Words often misspelt- confused/misused

Exercise – III

- **CALL Lab**: Minimal Pairs- Word accent and Stress Shifts- Listening Comprehension.
- **ICS Lab**: Descriptions- Narrations- Giving Directions and guidelines. Sequence of Tenses, Question Tags and One word substitutes.

Exercise – IV

- **CALL Lab**: Intonation and Common errors in Pronunciation.
- **ICS Lab**: Extempore- Public Speaking Active and Passive Voice, – Common Errors in English, Idioms and Phrases

Exercise – V

- **CALL Lab**: Neutralization of Mother Tongue Influence and Conversation Practice
- **ICS Lab**: Information Transfer- Oral Presentation Skills Reading Comprehension..

Minimum Requirement of infra structural facilities for ELCS Lab:

1. Computer Assisted Language Learning (CALL) Lab: The Computer aided Language Lab for 40 students with 40 systems, one master console, LAN facility and English language software for self- study by learners. R13 B.Tech I year syllabus System Requirement (Hardware component): Computer network with Lan with minimum 60 multimedia systems with the following specifications: i) P – IV Processor a) Speed – 2.8 GHZ b) RAM – 512 MB Minimum c) Hard Disk – 80 GB ii) Headphones of High quality

2. Interactive Communication Skills (ICS) Lab: The Interactive Communication Skills Lab: A Spacious room with movable chairs

and audio-visual aids with a Public Address System, a T. V., a digital stereo –audio & video system and camcorder etc.

Outcomes:

By the end of the course students will develop :

1. Better Understanding of nuances of language through audio- visual experience and group activities
2. Neutralization of accent for intelligibility
3. Speaking ability with clarity and confidence to enhance their employability skills

(A1002) ENGLISH – II

B.Tech (CSE) - II Semester

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OBJECTIVES

The fundamental aim of this course is to help the student to become a confident and competent communicator in written and spoken English. The methodology in teaching and evaluation shall be oriented towards this end, rather than rote memorization.

Prerequisite: Acquaintance with basic High School Grammar and Composition

GENERAL OBJECTIVES :

To enable the students :

1. to listen critically for speaker‘s tone or attitude
2. to narrate, express opinions and participate in conversations
3. to read critically to draw inferences and gain comprehension
4. to write project proposals, technical reports formally

SKILLS-WISE OBJECTIVES :

Listening Skills:

- To enable students to develop their listening skill for main points and sub-points for note taking
- To equip students with necessary training in listening for specific details and information

Speaking Skills:

- To make students aware of the language required for giving instructions and directions
- To enable students to express themselves clearly in hypothetical situations
- To enable students to make presentations formally.

R***eading Skills:***

- To develop an awareness among the students about the significance of reading for reference and details
- To develop the ability of reading for specific details and information

Writing Skills :

- To develop an awareness in the students about Report writing and Information Transfer
- To equip them with the components of Writing formal letters and CVs
- To enable them with different forms of writing like Project proposals, Technical reports, Project Reports and Research Papers.

SYLLABUS:

UNIT I

- Chapter entitled **_Risk Management'** from ―Skills Annexe - Functional English for Success‖ Published by Orient Black Swan, Hyderabad

- L – Listening for main points and sub-points for note taking
- S – giving instructions and directions; Speaking of hypothetical situations
- R – reading for details
- W – note-making, information transfer, punctuation
- G – present tense
- V – synonyms and antonyms
- Report writing
- Information Transfer

UNIT –II

➢ Chapter entitled _The Convocation Speech' by N.R. Narayanmurthy' from ―Epitome of Wisdom‖, Published by Maruthi Publications, Hyderabad

- L- Speech on _How do you make a teacher great?'
- S- Role play – Interviewing famous personalities
- R- Critical reading, reading for reference – _What is meant by Entrepreneurship?'
- W-Essay writing
- G- Focussing with passive voice
- V- One word substitute

UNIT –III

➢ Chapter entitled _Leela's Friend' by R.K. Narayan from ―Epitome of Wisdom‖, Published by Maruthi Publications, Hyderabad

- L –Listening for main points and sub-points for note taking
- S – Presentations
- R – reading for details
- W – note-making, information transfer, punctuation
- V – Guessing the words, using an appropriate word, Phrasal verbs

UNIT –IV

➢ Chapter entitled _Human Values and Professional Ethics' from ―Skills Annexe -Functional English for Success‖ Published by Orient Black Swan, Hyderabad

- L -Listening for specific details and information
- S- Narrating, expressing opinions and telephone interactions
- R -Reading for specific details and information
- W- Writing formal letters and CVs
- G- Past and future tenses
- V- Vocabulary - idioms and Phrasal verbs

UNIT –V

➢ Chapter entitled _Sports and Health' from ―Skills Annexe - Functional English for Success‖ Published by Orient Black Swan, Hyderabad

- L- Critical Listening and Listening for speaker's tone/ attitude
- S- Group discussion and Making presentations
- R- Critical reading, reading for reference

- W-Project proposals; Technical reports, Project Reports and Research Papers
- G- Adjectives, prepositions and concord
- V- Collocations and Technical vocabulary Using words appropriately

TEXT BOOKS :

In order to improve the language skills needed for professional students, the following textbooks and course content have been prescribed to expose the students to a variety of genres, themes and language styles.

1. A Text book entitled **"Skills Annexe", -Functional English to Success** Published by Orient Black Swan, Hyderabad
2. A text book entitled, **"Epitome of Wisdom",** Published by Maruthi Publications, Hyderabad.

REFERENCES:

1. Contemporary English Grammar Structures and Composition by David Green, MacMillan Publishers, New Delhi. 2010.
2. Innovate with English: A Course in English for Engineering Students, edited by T Samson, Foundation Books.
3. English Grammar Practice, Raj N Bakshi, Orient Longman.
4. Technical Communication by Daniel Riordan. 2011. Cengage Publications. New Delhi.
5. Effective English, edited by E Suresh Kumar, A Rama Krishna Rao, P Sreehari, Published by Pearson Education.
6. Handbook of English Grammar& Usage, Mark Lester and Larry Beason, Tata McGraw –Hill.
7. Spoken English, R.K. Bansal & JB Harrison, Orient Longman.
8. Technical Communication, Meenakshi Raman, Oxford University Press
9. Objective English Edgar Thorpe & Showick Thorpe, Pearson Education
10. Grammar Games, Renuvolcuri Mario, Cambridge University Press.
11. Murphy's English Grammar with CD, Murphy, Cambridge University Press.
12. Everyday Dialogues in English, Robert J. Dixson, Prentice Hall India Pvt Ltd.,
13. ABC of Common Errors Nigel D Turton, Mac Millan Publishers.
14. Basic Vocabulary Edgar Thorpe & Showick Thorpe, Pearson Education
15. Effective Technical Communication, M Ashraf Rizvi, Tata McGraw – Hill.

16. An Interactive Grammar of Modern English, Shivendra K. Verma and Hemlatha Nagarajan , Frank Bros & CO
17. A Communicative Grammar of English, Geoffrey Leech, Jan Svartvik, Pearson Education
18. Enrich your English, Thakur K B P Sinha, Vijay Nicole Imprints Pvt Ltd.,
19. A Grammar Book for You And I, C. Edward Good, MacMillan Publisher

Course outcomes: By the end of the course students will be able to:

1. Develop ability to listen critically for information
2. Express opinions and participate in conversations confidently
3. Develop focused reading for details and information
4. Write project proposals, technical reports and CVs formally

(A1008)MATHEMATICAL METHODS

B.Tech(CSE) - I Semester

L T P C 4 1 0 4

Objectives:

1. Obtain an intuitive and working understanding of some Mathematical Methods for the basic problems of numerical analysis.
2. Develop some experience in the implementation of numerical methods in engineering applications by using a computer.
3. Solutions of Ordinary Differential Equations using numerical methods.
4. The aim at forming a partial differential equation (PDE) for a function with many variables and their solution methods. Two important methods for first order PDE's are learnt. While separation of variables technique is learnt for typical second order PDE's such as Wave, Heat and Laplace equations.
5. Evaluate the Fourier transform of a continuous function, and be familiar with its basic properties.

Unit – I:

Solutions of Linear & Non-Linear equations : Introduction to Algebraic and Transcendental Equations, Bisection Method, Method of False Position (Regula – False Method), Iteration Method, Newton – Raphson's Method, Errors in Polynomial.GaussJacobi's iterative method, Gauss-Seidel Method.

Unit – II:Interpolation& Curve fitting:

Forward , Backward & Central Differences, Symbolic Relations, Newton's Forward & Backward Interpolation, Gauss's Forward & Backward Interpolation, Lagrange's Interpolation & Problems.

Fitting straight line, Fitting Non-Linear curve, Curve fitting by sum of Exponentials, Non-Linear Weighted least squares approximation.

Unit –III: Numerical Differentiation, Integrations & Solutions of ODE

Numerical Differentiation, Derivatives using forward & backward difference formula, Derivatives using central difference formula,

Trapezoidal Rule, Simpson's 1/3 Rule,3/8 Rule.

Introduction to Numerical solutions of ODE, Taylor's series method, Picard's method of Successive Approximations, Euler's method, Euler's

Modified method, Runga-Kutta method , Predictor and Corrector method, Milne's Predictor and Corrector method, Adams-Moulton method.

Unit – IV:Partial differential equations:

Introduction and Formation of partial differential equation by elimination of arbitrary constants and arbitrary functions solutions of first order linear (Lagrange) equation and non-linear equations (Charpit's method).Method of separation of variables for second order equations – applications of Partial differential equations – Two dimensional wave equation.Heat equation.

Unit – V: Fourier transforms & Z-transforms

Fourier integral theorem – Fourier sine and cosine integrals. Fourier transforms – Fourier sine and cosine transforms – properties – Inverse transforms – Finite Fourier transforms.

Z-transforms, inverse Z-transforms, properties, Damping rule, shifting rule, initial and final value theorems, convolution theorem, solution of difference equations by Z-transforms.

Text Books :

1. Kreyszig's Mathematical Methods by Dr. A. Ramakrishna Prasad, 2014 yr Edition John Wiley Publications.
2. Advanced Engineering Mathematics by R.K. Jain &S.R.K. Iyengar, 3rd edition, Narosa Publishing House, Delhi.

References :

1. Advanced Engineering Mathematics by Kreyszig, 8th Edition, John Wiley & Sons Publishers
2. Higher Engineering Mathematics by B.S. Grewal, 36th Edition, Khanna Publishers.
3. Advanced Engineering Mathematics with MATLAB, Dean G. Duffy, 3rd Edi, CRC Press Taylor & Francis Group.
4. Mathematics for Engineering and Scientists. Alan Jeffrey, 6th Edi, 2013, Chapman & Hall / CRC
5. Introductory Methods of Numerical Analysis , S. S. Sastry, 4h Edition, Prentice Hall of India Pvt. Ltd.
6. Mathematical Methods by T.K.V. Iyengar, B. Krishna Gandhi & Others, 2013 Yr. Edition S.Chand.
7. Mathematical Methods by D.S. Chandrasekhar, Prison Books Pvt. Ltd.
8. Mathematical Methods by G. ShankerRao & Others I.K. International Publications.

Outcomes:

1. The students be able to compute root of nonlinear equations by using different types of numerical methods.
2. The students be able to familiar with different kinds of techniques for interpolating data
3. The students be able to solve ODE Initial Value Problems using Euler‘s , Taylor‘s, Picard‘s & R-K methods,
4. The students be able to differential equation for an unknown function with many independent variables and to find their solution. Most of the problems in physical and engineering applications, problems are highly non-linear and hence expressing them as PDEs‘. Hence understanding the nature of the equation and finding a suitable solution is very much essential.
5. The students be able to evaluate the Fourier transform of a continuous function, and be familiar with its basic properties.

(A1014)ENGINEERING PHYSICS-II

B.Tech(CSE) - II Semester

L T P C 3 0 0 3

OBJECTIVES:

- To understand the introductory level concept of optical coherence, lasers and optical fiber characteristics.
- To understand the basic principles of dielectric properties of solids.
- To understand the physical principles underlying the magnetic and super conducting properties of solids.
- To understand the fundamental concepts of electromagnetic fields and laws governing them.
- To understand the basic principles of nanotechnology, ultrasonic and acoustics of buildings.

UNIT-I

Lasers: Characteristics of lasers, spontaneous and stimulated emission of radiation, Einstein's coefficients and relation between them, population inversion, lasing action in ruby laser, Helium-Neon laser, semiconductor diode laser, applications of lasers.

Fiber Optics: Principle of optical fiber, construction of fiber, acceptance angle and acceptance cone, numerical aperture, types of optical fibers: step index and graded index profiles, attenuation in optical fibers, optical fiber communication, optical fiber sensors.

UNIT-II

Dielectric Properties: Electric dipole, dipole moment, dielectric constant, polarizability, electric susceptibility, displacement vector, electronic, ionic, orientation and space charge polarizations and derivation of polarizabilities, internal fields in solids, Clausius - Mossotti equation, piezo-electricity, ferro- electricity and pyro-electricity.

UNIT-III

Magnetic Properties & Superconducting Properties: Permeability, field intensity, magnetic field induction, magnetization, magnetic susceptibility,

origin of magnetic moment, Bohr Magneton, classification of dia, para and ferro, ferri and anti-ferro magnetic materials on the basis of magnetic moment, domain theory of ferro magnetism on the basis of hysteresis curve, soft and hard magnetic materials.

Superconductivity: Introduction, critical field, Meissner effect, effect of magnetic field, type-I and type-II superconductors, BCS theory (qualitative), applications of superconductors.

UNIT-IV

Electromagnetic Theory: Review of steady and varying fields – Conduction and displacement current – Maxwell's equations in integral and differential forms – Electromagnetic wave equations in free space, dielectric and conducting media – Poynting theorem.

UNIT-V

Nanotechnology: Origin of nanotechnology, nano scale, surface to volume ratio, quantum confinement, bottom-up fabrication: sol-gel, precipitation, combustion methods; top-down fabrication: chemical vapour deposition, physical vapour deposition, pulsed laser vapour deposition methods, characterization by XRD & TEM; properties and applications.

Acoustics: Basic requirements of acoustically good hall, reverberation and time of reverberation, Sabine's formula for reverberation time, measurement of absorption coefficient of a material, factors affecting the architectural acoustics and their remedies.

Ultrasonics: Introduction, production of ultrasonics using piezoelectric method –magnetostriction method- applications.

TEXT BOOKS:

1. Engineering Physics by P K Palani Samy, Scitech Publications.

2. Applied Physics for Engineers by Dr.P.MadhusudanaRao, Academic Publishing Company.

3. Solid State Physics by S.O. Pillai (Main edition) – New Age Publishers.

REFERENCE BOOKS:

1. Fundamentals of Physics, David Halliday, Robert Resnick, Jearl Walker by John Wiley & Sons

2. Introduction to Solid State Physics – C. Kittel (Wiley Eastern).

3. Modern Physics by K. Vijaya Kumar, S. Chandralingam: S. Chand & Co.

4. Engineering Physics by R.K.Gaur and S.L.Gupta; Dhanpat Rai and Sons.

Outcomes:

- The student able to understand to understand the principle, construction, characteristics of laser and their applications in optical fiber communication
- Able to understand the various polarization processes in solids and classify different dielectric materials.
- Able to classify the magnetic materials in to various classes depending upon their magnetic moment. They are also able to understand the basic principles of superconductivity.
- Able to understand Maxwell‘s equations and be able to manipulate and apply them to EM problems.
- Able to understand how the properties of the material changes on nano scale. He can also understand the characteristics and production of ultrasonic. He will learn the basic requirements of a hall for good acoustics.

(A1017) ADVANCED ENGINEERING CHEMISTRY

B.Tech (CSE) - II Semester

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Objectives:

- Understand electrochemistry which deals with the utilization of electrical energy of an external source for bringing about a physical or chemical change.
- To give the students a basic understanding on polymers. The peculiar properties of the macromolecules are emphasized
- Understanding the significance of various Engineering materials like cement abrasives, adhesives and composites in structural enhancement of materials.
- A sustainable energy supply, is needed for promoting economic development as well as protecting the environment.
- To provide an overview of Industrial applications of surface chemistry.

UNIT I:
ELECTROCHEMISTRY

Electrochemistry- Conductance- Specific, Equivalent and Molar conductance and their units. Applications of Conductance (conductometric titration). Kohlrausch's law of Independent Migration of Ions, Concept of P^H and P^{OH}, Buffer solutions, Arrehenius Ionic Theory.

Galvanic cells, Types of Electrodes (Calomel, Quinhydrone and Glass Electrode); Nernst Equation and its applications; Concept of concentration cells; Electro chemical series, Potentiometric titrations, Determination of P^H using glass electrode – Numerical problems.

UNIT II :
HIGH POLYMERS

Polymers: Types of polymerization (addition, condensation and copolymerization) .

Plastics: Thermoplastic and Thermosetting resins, Compounding and fabrication of plastics (compression and injection moulding). Preparation, properties, Engineering applications of PVC, Teflon and Bakelite.

Fibers: Characteristics of fibers – preparation, properties and uses of Nylon – 6,6 and Dacron – Fibre Reinforced Plastics (FRP) – applications.

Rubbers: Natural rubber and its vulcanization.
Elastomers : Buna – s, Butyl rubber and Thiokol rubber.

Conducting Polymers: Polyacetylene, Polyaniline, Mechanism of conduction doping, applications of conducting polymers.

Bio-degradable Preparation and applications of Polyvinyl acetate and Polylactic acid.

UNIT III :
MATERIAL CHEMISTRY

Nanomaterials: Introduction, preparation by sol-gel and chemical vapour deposition methods, Carbon nano fibres, Nano gold particles and fullerenes; Applications of nano materials.

Superconductors, Semiconductors, Insulators and its applications.

Glass: Manufacture of Glass; Types of glass – Hard glass, Soft glass and Pyrex glass.

Refractories – Classification, properties, Characteristics of a good refractory material and its applications.

UNIT IV :
ENERGY SOURCES

Fuels – Classification.

Solid fuels; Coal – analysis of coal – proximate and ultimate analysis and their significance.

Liquid fuels – Petroleum and its refining, Cracking, Types- fixed bed catalytic cracking; Knocking – octane and cetane rating; Synthetic petrol, Bergius and Fischer Tropsch process;

Gaseous fuels- constituents, characteristics and applications of natural gas,

LPG and CNG. Analysis of flue gas by Orsat‘s apparatus – Numerical problems.

Combustion – Definition, calorific value of fuel – HCV, LCV,

Determination of calorific value by Junker‘s gas calorimeter – theoretical calculation of calorific value by Dulong‘s formula – Numerical problems on combustion.

UNIT V :
SURFACE CHEMISTRY

Adsorption – Types of Adsorption, Isotherms – Freundlich and Langmuir adsorption isotherm, applications of adsorption.

Colloids: Classification of colloids; Mechanical – Brownian movement. Electrical – Electrophoresis, Electro-osmosis. Iso electric point. Optical – Tyndall effect. Micelles. Applications of colloids in industry.

Text Books;

1. Engineering chemistry by B.Rama Devi & Ch. VenkataRamana Reddy; Cengage Learning, 2012

2.Engineering Chemistry P.C.Jain and M.Jain, DhanapatRai& Sons 3.Engineering chemistry by Dr.Bharathikumari, Dr.Jyotsna

4.Engineering chemistry by Thirumalachary, E. Laxminarayana ,SCITECH Publication (India) pvt ltd

References:

1. A Textbook of Engineering Chemistry, S.S. Dara, S. Chand& Co.
2. A Textbook of Engineering Chemistry, Sashi Chawla, Dhanapath Rai& Sons
3. Engineering Chemistry, B.K. Sharma Et al

Outcomes:

At the end of the course student will be able to

- Visualize the chemical applications of electricity.
- Understand why polymers are different than simple molecules, what are the basic kinds of polymers, their chemical structures and physical properties, the well-known techniques in polymer synthesis, the chemistry of polymer synthesis and the different types of mechanisms employed in polymer synthesis.
- The applicability and greater efficiency of using materials at different engineering fields, Understand the manufacturing process of cement, its properties and usage of abrasives, adhesives and composites in various industrial processes.
- Acquire knowledge of the types of fuels, their sources and purification techniques.
- Able to describe what kind of interactions may occur on the surface of adsorbent, Industrial applications of surface chemistry.

(A1502)DATA STRUCTURES THROUGH C

B.Tech(CSE) - II Semester

L T P C 4 1 0 4

Objectives:

- To introduce the students to basic data structures such as lists, stacks & queues.
- To make the students understand simple sorting & searching methods.
- To make the students to understand the concept of Non-Linear Data Structures.

UNIT-I

Linear Data Structures - Introduction to Data Structures, Abstract data types, Strategies for choosing the appropriate data structure, Introduction to Linear and Non-Linear Data Structures.

Singly linked list- Operations, insertion, deletion, Concatenating singly linked lists, Circular linked list- operations for Circular Linked lists. Doubly linked list- Operations- insertion, deletion, Representations of single, two dimensional arrays (RMO & CMO).

UNIT-II

Stack ADT: Definition, operations, array and linked representations of stacks, Applications: Infix to postfix conversion, postfix expression evaluation, Recursion implementation, Towers of Hanoi problem.

UNIT-III

Queue ADT: Definition & Operations, Array and linked implementation in C , Circular Queues- Insertion and deletion operations. Deque(Double ended queue)ADT- Array and linked implementation in C. Applications of Queues-Priorityqueues,

UNIT-IV

Non-Linear Data Structures

Trees- Terminology, Representation of Trees **,** Binary Tree ADT, Properties of Binary Trees ,Binary Tree Representations-Array and Linked Representation. Binary Search Tree, Binary Tree Traversals.

Graphs – Introduction, Definitions, Terminology Graph ADT Graph Representations-Adjacency Matrix, Adjacency Lists. Graph traversals-DFS and BFS.

UNIT-V

Searching and Sorting: Linear Search, Binary Search, Bubble Sort, Selection Sort, Insertion Sort, Quick Sort, Merge Sort, Performance analysis of Searching and Sorting techniques using Asymptotic notations. Comparison of sorting methods.

Text Books:

1. Yedidyah Langsam, Moshe J. Augenstein and Aaron M. Tenenbaum, Data Structures using C and C++. 2 ed, Pearson Education.
2. C Programming& Data Structures, B.A.Forouzan and R.F. Gilberg, Third Edition, Cengage Learning.
3.Fundamentals of Data Structures in C,2nd Edition,E.Horowitz,S.Sahani and Susan.

Reference Books:

1. C Programming & Data Structures, E. Balagurusamy, TMH.
2. C& Data structures – P. Padmanabham, Third Edition, B.S. Publications.
3. Mark Allen Weiss, Data structures and Algorithm Analysis in C. Addison Wesley Publication.

Electronic Materials, Websites:

1. https://www.youtube.com/user/mycodeschool

2. http://freevideolectures.com/Course/2279/Data-Structures-And- Algorithms

Outcomes:

- Demonstrate the basic knowledge of lists, stacks & queues
- Ability of understand the concept of Non-Linear Data Structures

(A1306) ENGINEERING DRAWING

B.Tech(CSE) - II Semester

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UNIT – I

Introduction To Engineering Drawing : Principles of Engineering Graphics and their Significance, Conic Sections including the Rectangular Hyperbola – General method only. Cycloid, Epicycloid and Hypocycloid, Involute.

Scales – Plain, Diagonal and Vernier Scales.

UNIT- II

Orthographic projections:

Principles of Orthographic Projections – Conventions – Projections of Points and Lines

UNIT – III

Projections of Planes: Plane Regular geometric figures -Auxiliary Planes.

Projections of Solids: Projection of regular solids, cube, prisms, pyramids, cone –use of Auxiliary Views.

UNIT – IV

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

UNIT-V

Transformation of Projections: Conversion of Isometric Views to Orthographic Views and Vice-versa – Conventions

TEXT BOOKS:

1. Engineering Drawing N.D. Bhatt / Charotar
2. Engineering Drawing and Graphics Rane and Shah/ Pearson Edu.

REFERENCE BOOKS:

1. A Text Book of Engineering Drawing / Dhawan R K / S. Chand

2. Engineering Graphics With Auto CAD / James D Bethune / Pearson Edu.
3. Engineering Graphics / K R Mohan / Dhanpat Rai.
4. Text book on Engineering Drawing / KL Narayana/ P Kannaih / Scitech

(A1543)DATA STRUCTURES LAB

B. Tech (CSE) II-Semester

L T P C 0 0 3 2

Objectives:

1. To understand the basic concepts such as Abstract Data Types, Linear and Non Linear Data Structures.
2. To understand the behaviour of data structures such as stacks, queues.
3. To write and execute programs in C to solve problems using Data Structures such as arrays, Linked Lists, Trees and Graphs.
4. To write and execute programs in C to implement various Sorting and Searching methods.

	WEEK WISE PROGRAMS
Week1	Write a C program that uses functions to perform the following (i)Creating a Singly linked list of integers (ii)Delete a given integer from above linked list. (iii)Display the contents of the above list after deletion
Week2	Write a C program that uses functions to perform the following (i)Creating a Doubly linked list of integers (ii)Delete a given integer from above linked list. (iii)Display the contents of the above list after deletion
Week 3	Write C programs to implement Stack ADT using (i)Array (ii)Linked List
Week4	Write C programs to implement Queue ADT using (i)Array (ii)Linked List
Week5	Write a C program that uses stack operations to convert a given infix expression in to its postfix equivalent.(Implement the Stack using Array)
Week6	Write a C program to implement double ended queue ADT using (i)Array and (ii) Doubly linked list respectively.
Week7	Write a C program that uses functions to perform the following (i)Create a Binary Search Tree of Integers (ii)Traverse above binary search tree recursively in Pre- Order Post -Order, In-Order

Week8	Write a C program that uses functions to perform the following (i)Create a Binary Search Tree of Integers (ii)Traverse above binary search tree non-recursively in In-Order.
Week9	Write C programs for implementing the following Sorting methods for sorting a given list of integers in ascending order. (i)Bubble Sort (ii)Quick Sort(iii) Insertion Sort
Week10	Write C programs for implementing the following Sorting methods for sorting a given list of integers in ascending order. (i) Selection Sort (ii) Merge Sort
Week11	(a)Write a C program for implementing the Depth First Search graph traversal algorithm using (i) recursion (ii) without recursion. (b) Write a C program for implementing the Breadth First Search graph traversal algorithm using queues.
Week12	Write C programs for implementing the following Search methods (i)Linear Search (ii) Binary Search

Outcomes

1. Ability to understand the basic concepts such as Abstract Data Types, Linear and Non Linear Data Structures.
2. Understand the behavior of data structures such as stacks, queues.
3. Developed & executed programs in C to solve problems using Data Structures such as arrays, Linked Lists, Trees and Graphs.
4. Understand the behavior of various Sorting and Searching methods.

(A1015)ENGINEERING PHYSICS LAB

B. Tech(CSE) - II Semester

L T P C 0 0 3 2

Objectives:

- This course on Physics lab is designed with 15 experiments in a semester. It is common to all branches of engineering.
- The objective of the course is that the student will have exposure to various experimental skills which is very essential for an engineering student.
- The experiments are selected from various area of Physics like Physical Optics, Lasers, Fiber Optics, Sound,Mechanics, Electricity & Magnetism and Basic Electronics.
- Also the student is exposed to various tools like Screw gauge, Vernier Callipers, Physical Balance, Spectrometer and Microscope.

(Any ten experiments compulsory)

1. Determination of wavelength of a source – Diffraction Grating.
2. Newton‘s Rings - Radius of curvature of plano convex lens.
3. Melde‘s experiment – Transverse and longitudinal modes.
4. Time constant of an R-C circuit.
5. L-C-R circuit.
6. Magnetic field along the axis of current carrying coil – Stewart and Gees method.
7. Bending losses of fibres & Evaluation of numerical aperture of a given fibre.
8. Energy gap of a material of p-n junction.
9. Torsional pendulum.
10. Wavelength of light –Diffraction grating using laser.
11. Sonometer -AC power supply.
12. Characteristics of a LED.
13. Characteristics of a photodiode.
14. Characteristics of a solar cell.
15. Determination of velocity of ultrasonic waves.

Outcomes:

- The student is expected to learn from this laboratory course the concept of error and its analysis. It also allows the student to develop experimental skills to design new experiments in Engineering.

- With the exposure to these experiments the student can compare the theory and correlate with experiment.

Laboratory Manual:

1. Laboratory Manual of Engineering Physics by Dr.Y. Aparna & Dr. K. Venkateswara Rao (V.G.S Publishers).

(A1544)IT WORKSHOP LAB

B. Tech(CSE) - II Semester

L T P C 0 0 3 2

Objectives:

The IT Workshop for engineers is a training lab course spread over 42 hours. The modules include training on PC Hardware, Internet & World Wide Web and Productivity tools including Word, Excel and Power Point.

Outcomes:

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 working PC to disassemble and assemble 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 and effectively 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 and power point presentations using the Microsoft suite of office tools and LaTeX. (**Recommended to use**
Microsoft office 2007 in place of MS Office 2003).

PC Hardware:

Week 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.

Week 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 would be given as part of the course content.

Week 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.

Week 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

Week 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

Internet & World Wide Web:

Week 6 - Task 1 : **Orientation & Connectivity Boot Camp :** Students should get connected to their Local Area Network and access the Internet. In the process they configure the TCP/IP setting. Finally students should demonstrate, to the instructor, how to access the websites and email. If there is no internet connectivity preparations need to be made by the instructors to simulate the WWW on the LAN.

Task 2 : Web Browsers, Surfing the Web : Students customize their web browsers with the LAN proxy settings, bookmarks, search toolbars and pop up blockers. Also, plug-ins like Macromedia Flash and JRE for applets should be configured.

Week 7 -Task 3: Cyber Hygiene: Students would be exposed to the various threats on the internet and would be asked to configure their computer to be safe on the internet. They need to first install antivirus software, configure their personal firewall and windows update on their computer. Then they need to customize their browsers to block pop ups, block active x downloads to avoid viruses and/or worms.

Productivity tools

LaTeX and Word:

Week 8 – 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 three 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.

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.

Week 9 - Task 2: Creating project abstract Features to be covered:-Formatting Styles, Inserting table, Bullets and Numbering, Changing Text Direction, Cell alignment, Footnote, Hyperlink, Symbols, Spell Check, Track Changes.

Week 10 - Task 3 : Creating a Newsletter : Features to be covered:-Table of Content, Newspaper columns, Images from files and clipart, Drawing toolbar and Word Art, Formatting Images, Textboxes, Paragraphs and Mail Merge in word.

Excel:

Week 11 - 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 two 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

Week 12 - Task 2 : Calculating GPA - .Features to be covered:- Cell Referencing, Formulae in excel – average, std. deviation, Charts, Renaming and Inserting worksheets, Hyper linking, Count function, LOOKUP/VLOOKUP, Sorting, Conditional formatting

LaTeX and MS/equivalent (FOSS) tool Power Point:

Week 13 - Task1: Students will be working on basic power point utilities and tools which help them create basic power point presentation. Topic covered during this week includes :- PPT Orientation, Slide Layouts, Inserting Text, Word Art, Formatting Text, Bullets and Numbering, Auto Shapes, Lines and Arrows in both LaTeX and Power point.Students will be

given model power point presentation which needs to be replicated (exactly how it's asked).

Week 14 - Task 2: Second week helps students in making their presentations interactive. Topic covered during this week includes: Hyperlinks, Inserting –Images, Clip Art, Audio, Video, Objects, Tables and Charts

Task 3: Concentrating on the in and out of Microsoft power point and presentations in LaTeX. Helps them learn best practices in designing and preparing power point presentation. Topic covered during this week includes: - Master Layouts (slide, template, and notes), Types of views (basic, presentation, slide slotter, notes etc), Inserting – Background, textures, Design Templates, Hidden slides.

REFERENCE BOOKS:

1. Introduction to Information Technology, ITL Education Solutions limited, Pearson Education.LaTeX Companion – Leslie Lamport, PHI/Pearson.

3.Introduction to Computers, Peter Norton, 6/e McGraw Hill Publishers.

4.Upgrading and Repairing, PC's 18th e, Scott Muller QUE, Pearson Education

5.Comdex Information Technology course tool kit Vikas Gupta, WILEY Dreamtech

6.IT Essentials PC Hardware and Software Companion Guide Third Edition by David Anfinson and Ken Quamme. – CISCO Press, Pearson Education.

7.PC Hardware and A+Handbook – Kate J. Chase PHI (Microsoft)

Outcomes:

- Apply knowledge for computer Assembling & software installation
- Ability how to solve the trouble shooting problems
- Apply the tools for preparation of PPT, documentation & budget sheet etc.

(A1303) ENGINEERING WORKSHOP

B. Tech(CSE) - II Semester

L T P C 0 0 3 2

I TRADE FOR EXERCISE:

(Two experiments each from any six trades of the following)

1. Carpentry
2. Fitting
3. Tin-smithy
4. House-wiring
5. Foundry
6. Plumbing
7. Welding
8. Black smithy

II TRADES FOR DEMONSTRATION AND EXPOSURE:

1. Power tools
2. Machine tools

Text Book: Workshop Manual, Second edition/ P Kannaiah and K L Narayana/ Scitech publishers

(A1503) MATHEMATICAL FOUNDATION OF COMPUTER SCIENCE

B.Tech (CSE) - III Semester

L T P C 4 0 0 4

Objectives:

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

UNIT-I

Mathematical Logic : Statements and notations, Connectives, Well formed formulas, Truth Tables, tautology, equivalence implication, Normal forms, Quantifiers, Universal quantifiers.

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

UNIT-II

Relations : Properties of binary Relations, equivalence, transitive closure compatibility and partial ordering relations, Lattices, Hasse Diagram
Functions: Inverse Function Composition of functions, recursive Functions, Lattice and its Properties,

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

UNIT-III

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

UNIT-IV

Recurrence Relation : Generating Functions, Function of Sequences Calculating Coefficient of generating function, Recurrence relations, Solving recurrence relation by substitution and Generating functions. Characteristics roots, Solutions of In homogeneous Recurrence Relation.

UNIT-V

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

TEXT BOOKS :

1. Elements of DISCRETE MATHEMATICS- A computer oriented Approach- C L Liu, DP Mohapatra, Third Edition, Tata McGraw Hill
2. Discrete Mathematics For Computer Scientists & Mathematicians JL Mott, A Kandel, TP Baker PHI

REFERENCES :

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

Outcomes:

- Ability to illustrate by examples the basic terminology of functions, relations, sets and demonstrate knowledge of their associated operations.
- Ability to demonstrate in practical applications the use of basic counting principles of permutations, combinations, inclusion/exclusion principle and the pigeon hole methodology
- Ability to represent and apply graph theory in solving computer science problems

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(A1504)ADVANCED DATA STRUCTURES THROUGH C++

B.Tech(CSE) - III Semester

L T P C 4 1 0 4

Objectives:

- To understand the basic concepts such as Abstract Data Types, Linear and Non Linear Data structures.
- To understand the notations used to analyze the Performance of algorithms.
- To understand the behavior of data structures such as stacks, queues, trees, hash tables, search trees, Graphs and their representations.
- To choose the appropriate data structure for a specified application.
- To understand and analyze various searching and sorting algorithms.
- To write programs in C to solve problems using data structures such as arrays, linked lists, stacks, queues, trees, graphs, hash tables, search trees.

Unit I:

Over view of C++ : Object-Oriented Programming, C++ fundamentals ,Class and Objects-Class, Constructors, Destructors. Functions-Call by Value, Call by Reference, Default Arguments, passing objects to functions, inline functions, Friend Functions. Static class members-static member variables, static member functions. Exception Handling.

Unit II:

C++ Advanced Basics: Function Overloading-overloading constructors, copy constructors.

Overloading operators, Templates-Function templates, Class Templates. Name Spaces, Inheritance-Multiple inheritance, virtual base class. Polymorphism-Virtual member functions, Binding, Pure virtual functions, Abstract Classes. Input Output.

Unit III:

Algorithms Basics: performance analysis- time complexity and space complexity, Asymptotic Notation- Big O, Omega and Theta notations.

Review of linear data structures: The list ADT, Stack ADT, Queue ADT, array and linked list Implementations using template classes in C++.

Advanced Non-linear Data Structures: Threaded binary trees, Max Priority Queue ADT-Implementation,-MAX Heap Definition, Insertion into a Max Heap ,Deletion from a Max Heap.

Unit IV:

Over view of Linear Search Methods-Linear Search, Binary Search Non-Linear Search Methods-.Binary Search Tree-Operations-Searching, Insertion, Deletion.

AVL Trees-Definition, Examples, Insertion into AVL Trees. M-way Search Tree Definition, Examples, B-Tree ,Definition, B-tree of order-m, operations-Insertion and Searching,

Introduction to Red –Black Trees and Splay Trees (Elementary treatment-only Definition and Examples).Comparison of Search Trees,

Unit V:

Dictionaries: Dictionary as a linear list, skip list-operations-Insertion, Deletion, Searching

Hash tables, Hash Functions, Collision Resolution Techniques-Linear Probing, Quadratic Probing, and Double Hashing.

Pattern Matching Algorithms: Brute-Force Algorithm, Boyer-Moore Algorithm, Knuth-Morris-Pratt Algorithm .Tries.

Textbooks:

1. Data structures and Algorithm Analysis in C++, Mark Allen Weiss, Pearson Education. Ltd., Second Edition.
2. Data structures, Algorithms and Applications in C++, S.Sahni, University Press (India) Pvt.Ltd, 2nd edition, Universities Press Orient Longman Pvt. Ltd.
3. Data structures and Algorithms in C++, Michael T.Goodrich, R.Tamassia and .Mount, Wiley student edition, John Wiley and Sons.

References:

1. Data structures and algorithms in C++, 3rd Edition, Adam Drozdek, Thomson
2. Data structures using C and C++, Langsam, Augenstein and Tanenbaum, PHI.
3. Problem solving with C++, The OOP, Fourth edition, W.Savitch, Pearson education.
4. Data Structures using C++, D.S.Malik Cengage Learning, India Edition.

5. Data Structures with C++ Using STL, 2nd edition, W.H. Ford and W.R. Topp, Pearson/PHI.
6. Mastering Algorithms with C.K. Loudon, O_Reilly, SPD Pvt. Ltd.
7. An Introduction to Data structures and Algorithms, J.A. Storer, Springer.
8. Advanced Data Structures & Algorithms in C++, V.V. Muniswamy Jaaico Publishing House

Outcomes:

- Learn how to use data structure concepts for realistic problems.
- Ability to identify appropriate data structure for solving computing problems in respective language.
- Ability to solve problems independently and think critically.

(A1020)ENVIRONMENTAL STUDIES

B.Tech(CSE) - III Semester

L T P C 4 0 0 4

Objectives:

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

UNIT-I :

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

UNIT-II:

Natural Resources: Classification of Resources: Living and Non-Living resources**, water resources:** use and over utilization of surface and ground water, floods and droughts, Dams: benefits and problems. **Mineral resources:** use and exploitation, environmental effects of extracting and using mineral resources, **Land resources:** Forest resources, **Energy resources:** growing energy needs, renewable and non renewable energy sources, use of alternate energy source, case studies

UNIT-III:

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

UNIT-IV:

Environmental Pollution and Control Technologies: Environmental Pollution: Classification of pollution, **Air Pollution:** Primary and

secondary pollutants, Automobile and Industrial pollution, Ambient air quality standards. **Water pollution:** Sources and types of pollution, drinking water quality standards. **Soil Pollution:** Sources and types, Impacts of modern agriculture, degradation of soil. **Noise Pollution:** Sources and Health hazards, standards, **Solid waste:** Municipal Solid Waste management, composition and characteristics of e-Waste and its management. **Pollution control technologies:** Wastewater Treatment methods: Primary, secondary and Tertiary.

Overview of air pollution control technologies, Concepts of bioremediation.

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

UNIT-V:

Environmental Policy, Legislation &EIA: Environmental Protection act, Legal aspects Air Act- 1981, Water Act, Forest Act, Wild life Act, Municipal solid waste management and handling rules, biomedical waste management and handling rules, hazardous waste management and handling rules. EIA: EIA structure, methods of baseline data acquisition. Overview on Impacts of air, water, biological and Socio-economical aspects. Strategies for risk assessment, Concepts of Environmental Management Plan (EMP). **Towards Sustainable Future:** Concept of Sustainable Development, Population and its explosion, Crazy Consumerism, Environmental Education, Urban Sprawl, Human health, Environmental Ethics, Concept of Green Building, Ecological Foot Print, Life Cycle assessment (LCA), Low carbon life style.

TEXT BOOKS:

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

REFERENCE BOOKS:

1. Environmental Science: towards a sustainable future by Richard T. Wright. 2008 PHL Learning Private Ltd. New Delhi.

2. Environmental Engineering and science by Gilbert M. Masters and Wendell P. Ela .2008 PHI Learning Pvt. Ltd.

13. Environmental Science by Daniel B. Botkin& Edward A. Keller, Wiley INDIA edition.

14.Environmental Studies by Anubha Kaushik, 4th Edition, New age international publishers.

15. Text book of Environmental Science and Technology - Dr. M. Anji Reddy 2007, BS Publications

Outcomes:

Based on this course, the Engineering graduate will understand /evaluate / develop technologies on the basis of

ecological principles and environmental regulations which inturn helps in sustainable development

(A1505) COMPUTER ORGANIZATION

B. Tech (CSE) - III Semester

L T P C 4 1 0 4

Objectives:

- To understand basic components of computers
- To explore the I/O organizations in depth
- To explore the memory organization
- To understand the basic chip design and organization of 8086 with assembly language programming

UNIT I :

Basic Computer Organization – Functions of CPU, I/O Units, Memory Instructions : Instruction formats- one address, two addresses, zero addresses and three addresses and comparison: addressing modes with numeric examples: Program Control – status bit conditions, conditional branches instructions, Program Interrupts: Types of Interrupts.

UNIT II :

Input-Output Organizations - I/O Interface, I/O Bus & Interface Modules: I/O Vs Memory Bus, Isolated Vs Memory Mapped I/O, Asynchronous data Transfer- Strobe Control, Hand Shaking: Asynchronous Serial Transfer- Asynchronous Communication Interface, Modes of Transfer Programmed I/O, Interrupt Initiated I/O , DMA Controller, DMA Transfer, IOP-CPU-IOP Communication, Intel 8089 IOP

UNIT III :

Memory Organizations: Memory hierarchy, Main Memory, RAM,ROM Chips, Memory Address Map. Memory Connection to CPU, Associative Memory, Cache Memory, Data Cache, Instruction Cache, Miss & Hit Ratio, Access time, Associative, Set Associative, Mapping, Waiting into Cache, Introduction to Virtual Memory

UNIT IV :

8086 CPU Pin Diagram Special functions of general purpose registers, Segment Registers, concept of pipelining, 8086 flag registers, Addressing Modes of 8086

UNIT V :

8086 Instruction formats: Assembly language programs involving branch and call instructions, sorting, evaluation of arithmetic expressions.

TEXT BOOKS :

1. Computer Systems Architecture – M.Moris Mano, (UNIT-1,2,3)
2. Advanced Micro Processors & peripherals Hall/AK Ray (unit-4,5)

REFERENCES :

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

OUTCOMES:

- After this course students understand in a better way the I/O and memory organization in depth. They should be in a position to write assembly language programs for various applications.

(A1443) DIGITAL LOGIC DESIGN

B.Tech(CSE) - III Semester

L T P C 4 1 0 4

Objectives:

This course provides in-depth knowledge of switching theory and the design techniques of Digital Circuits, which is the basis for design of any digital circuit. The main objectives are:

- To learn basic techniques for the design of digital circuits and fundamental concepts used in the design of digital systems.
- To understand common forms of number representation in digital electronic circuits and to be able to convert between different representations.
- To implement simple logical operation using combinational logic circuits.
- To design combinational logic circuits, sequential logic circuits.
- To impart to student the concepts of sequential circuits, enabling them to analyze sequential systems in terms of state machines.
- To implement synchronous state machines using Flip-Flops.

UNIT I:

Digital Systems: Binary numbers, Octal, Hexa Decimal and other base numbers, Number Base Conversions, Complements, Signed binary numbers, floating point number representations, binary ports, Error detecting and Correcting Codes, Digital Logic Gates(AND, NAND, OR, NOR, EX-OR, EX-NOR), Boolean Algebra, Basic Theorems and properties, Boolean Functions, Canonical And Standard forms.

UNIT II:

Gate level Minimization and Combinational Circuits, Digital Logic Gates, The K- Maps methods , Three Variable, Four Variable, Five Variable, Sum Of Products, Product of sums simplification, Don‘t care conditions, NAND and NOR implementations and other two level implementations.

UNIT III:

Combinational Circuits (CC): Design procedure, Combinational circuit for different code converters and other problems, Binary Adder, Subtractor, Multiplier, Magnitude Comparator , decoders, Encoder s, Multiplexers, Demultiplexers.

UNIT IV:

Synchronous Sequential Circuits: Latches, Flip-Flops, Analysis of Clocked Sequential Circuits, Design of counters, Up-down Counters, Ripple counters, Registers, Shift registers, Synchronous counters.

Asynchronous sequential circuits: Reduction of state and flow table, role-free conditions.

UNIT V:

Memory: Random Access Memory, Types of ROM, Memory Decoding, Address and data bus, Sequential Memory, Cache Memory, Programmable logic Arrays, Memory Hierarchy in terms of capacity and Access Time.

TEXT BOOKS:

1. Digital Design – M. Morris Mano.

REFERENCE BOOKS:

1. Switching & Finite Automata theory – Zvi. Kohavi, , Tata McGraw Hill..
2. Switching & Logic Design, C.V.S Rao, Pearson Education.
3. Digital Principles and Design- Donald D. Givone, Tata McGraw Hill.
4. Fundamentals of Digital Logic & Microcomputer Design, 5th Edition, M. Rafiquzzaman, John Wiley.

Outcomes:

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Upon completion of the course, students should posses the following skills

- Be able to manipulate numeric information in different forms, e.g., different bases , signed integers, various codes such as ASCII, gray and BCD
- Be able to manipulate simple Boolean expressions using the theorems and postulates of Boolean algebra and to minimize combinational functions
- Be able to design and analyze small combinational circuits and to use standard combinational functions/building blocks to build larger more complex circuits
- Be able to design and analyze small sequential circuits and devices and to use standard sequential functions/ building blocks to build larger more complex circuits.

(A1244) BASIC ELECTRICAL & ELECTRONICS

B.Tech(CSE) - III Semester

L T P C 4 1 0 4

Objective:

This course introduces the concepts of electrical DC and AC circuits, basic law‘s of electricity, instruments to measure the electrical quantities, different methods to solve the electrical networks, construction operational features of energy conversion devices i.e. DC and AC machines, transformers. Basics of electronics, semiconductor devices and their characteristics and operational features.

UNIT-I : Electrical & Single Phase AC Circuits

Electrical Circuits: R-L-C Parameters, Voltage & Current, Independent and Dependent Sources, Sources Transformations - V- I relationship for passive elements, Kirchoff‘s Law, Network reduction techniques- series, Parallel, series parallel, star – to – delta, delta- to – star transformation, Nodal Analysis.

Single Phase AC Circuits- RMS and average values, form factor, steady state analysis of series, parallel and series parallel combinations of R, L and C with Sinusoidal excitation, concepts of reactance Impedance, Susceptance and admittance- Phase and Phase difference, Concept of Power factor, J- notation, Complex and Polar forms of representation.

UNIT - II Resonance and Network Theorems:

Resonance – Series resonance and parallel resonance circuits, concepts of bandwidth and Q factor, Locus Diagram for RL, RC and RLC combinations for Various parameters.

Network Theorems: Thevenin‘s, Norton‘s, Maximum power transfer, Superposition, Reciprocity, Tellegan‘s Millman‘s and Compensation theorems for DC and AC excitations.

UNIT-III P-N Junction Diode & Diode Circuits:

P-N Junction Diode- Diode equation, energy band diagram, volt-ampere characteristics, Temperature dependence, Ideal Versus practical, Static and Dynamic resistance, Equivalent circuits, Load Line analysis, Diffusion and Transition Capacitances.

Rectifiers and Filters- The P-N junction as a rectifier, A half wave rectifier, Ripple factor, Full wave rectifier, Bridge Rectifier, Harmonic

components in rectifier circuits, filters- Inductor filters, Capacitor filters, L-section, - Section filters

UNIT- IV Bipolar Junction Transistor:

Bipolar Junction Transistors (BJT)- Construction, Principle of operation, Symbol, Amplifying action, Common Emitter, Common Base and Common Collector configuration

Transistor Biasing and Stabilization- Operation point, DC and AC load lines, Biasing- Fixed Bias, Emitter feedback bias, Collector to emitter feedback bias, voltage divider bias, Bias stability, Stabilization against variation in V_{BE} and β, Bias compensation using diode and transistors.

Transistor configuration – BJT modeling, Hybrid model, determination of h- parameters from transistors characteristics, analysis of CE, CB and CC configurations using h- parameters, comparison of CE, CB, CC configurations.

UNIT-V Junction field effect transistor & special purpose devices:

Junction field effect transistor- Construction, principle of operation, symbol, pinch- off voltage, Volt- ampere characteristics, comparison of BJT and FET, Small signal model, Biasing FET.

Special Purpose Devices – Breakdown mechanisms in semi conductor diodes, Zener Diode characteristics, Use of Zener Diode as Simple regulators principles of operations and characteristics of tunnel diode(with help of energy band diagram) and Varactor diode, principle of operation of SCR.

Text Books:

1. Electronic Devices and Circuits – R.L. Boylestad and Louis Nashelsky, PEI/PHI, 9th Ed, 2006.
2. Millman's Electronic Devices & Circuits-J. Millman, C.C. Halkais & Satyabrata Jit, 2 Ed., 1998, TMH.
3. Electric Circuits by A.Chakrabarthy, Dhanipat Rai & Sons

REFERENCES:

1. Introduction to Electronic Devices and Circuits-Rober T. Paynter, Pearson Education.
2. Electronic Devices and Circuits – K. Lal Kishore, B.S. Publications, 2nd Edition, 2005.

3. Electronic Devices and Circuits – Anil K. Maini, Varsha Agarwal – Wiley India Pvt. Ltd. 1/e 2009.

4. Linear ciruit analysis (time domain phasor and Laplace transform approaches)- 2nd edition by Raymond a. DeCarlo and Pen-Min-Lin, Oxford University Press-2004.

5. Network Theory by N.C.Jagan & C.Lakshminarayana, B.S. Publications.

6. Network Theory by Sudhakar, Shyam Mohan Palli, TMH.

Outcomes

- Able to understand the basic electrical circuits, parameters, network reduction techniques and 1φ AC circuits.
- Able to solve different electrical circuits using network theorems and understand the concept of resonance phenomena.
- Able to understand working principles, Characteristics of Diodes & Transistors

(A1245) ELECTRICAL & ELECTRONICS LAB

B.Tech(CSE) - III Semester

L T P C 0 0 3 2

Objective

This course provides the in-depth knowledge of different laws and network theorems by verifying practically. It also introduces the phenomena of resonance.

PART A:

1. Identification, Specifications, Testing of R, L,C Components (Color Codes), Potentiometers, Switches (SPDT, DPDT, and DIP), Coils, Gang Condensers, Relays, Bread Boards, PCB‘s
2. Identification, Specification and Testing of Active Devices, Diodes, BJT‘s, Low power JFET‘s, MOSFET‘s Power Transistors, LED‘s, LCD‘s, SCR, UJT.
3. Study and operation of
   - Multimeters (Analog and Digital)
   - Function Generator
   - Regulated power Supplies
   - CRO
4. PN Junction diode characteristics A) Forward bias B) Reverse bias.
5. Zener diode characteristics and Zener as voltage Regulator
6. Full Wave Rectifier with & without filters

PART B:

1. Verification of KVL and KCL.
2. Serial and Parallel Resonance – Timing, Resonant frequency, Bandwidth and Q-factor determination for RLC network.
3. Verification of Superposition and Reciprocity theorems.
4. Verification of maximum power transfer theorem. Verification on DC, verification on AC with Resistive and Reactive loads.
5. Experimental determination of Thevenin‘s and Norton‘s equivalent circuits and verification by direct test.

Outcomes

- Able to verify KCL & KVL.
- Able to verify different theorems.
- Able to understand resonance phenomena for RLC networks.

(A1545)ADVANCED DATA STRUCTURES THROUGH C++ LAB

B.Tech (CSE) - III Semester

L T P C 0 0 3 2

Objectives:

- To write and execute programs in C++ to solve problems using data structures such as arrays, linked lists, stacks, queues, trees, graphs, hash tables and search trees.
- To make the student learn an 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.

Week 1 : Implement the Complex number ADT using a class.The complex ADT is used to represent complex numbers of the form :c=a+ib, where a and b are real numbers. The operations supported by this ADT are (overload +,-,*,<<, and >>)

a)Reading a complex number
b)writing a complex number
c)Addition of complex numbers
d)Subtraction of complex numbers
e)Multiplication of complex numbers

Week 2 : Write a template based C++ program that determines if a particular value occurs in an array of values(Sequential Search).(Note: Test for integers, floating-point values and strings.)

Week 3 :write C++ programs to implement the following
a) Static polymorphism b)Dynamic Polymorphism

Week 4 :write a C++ program to implement the foloowing
a)Function template b)Class Template

Week5

a) Write a C++ program to demonstrate the usage of C++ Exception Handling mechanism.

b) Write a C++ program to implement the following

(i))single inheritance ii)Multiple inheritance iii)Multi-level inheritance iv)Hybrid-inheritance.

Week 6 :

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

b) Insert an element into a binary search tree.

c) Delete an element from a binary search tree.

d) Search for a key element in a binary search tree.

Week 7 : Write a C++ program to perform the following a)Create a Threaded Binary Tree of Integers

b)Insert a node in to above Threaded binary tree of integers\

c)Traverse above Threaded Binary Tree in In-order

Week 8 : Write a C++ program to perform the following a)Create a Binary Search Tree of integers

b)Insert a node in to above Binary Search Tree

c)Delete a node from above Binary Search Tree

d)Search a given node in above Binary Search Tree e)Display the above Binary Search Tree

Week 9 : Write a C++ program to perform the following a)Create an AVL tree of integers

b)Insert a node in to above AVL tree of integers

c)Delete a node from above AVL tree of integers

d)Search a given node in above AVL tree of integers e)Display the above AVL tree of integers

Week 10 :

Write a C++ program to perform the following operations a)Insertion into a B-tree b) Deletion from a B-tree

Week 11 :

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

Week 12 :

a) Write a C++ program for implementing Brute force pattern matching algorithm.

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

Textbooks:

1. Data Structures A Pseudocode Approach with C++ , Indian edition, R.F. Gilberg and B.A. Forouzan, Cengage Learning.
2. Programming Prinicples and Practice using C++, B.Stroustrup, Addition-Wiesly (Pearson Education).
3. Data Structures and STL, W.J.Collins, Mc Graw Hill International edition.
4. Data Structures and algorithms with OODesign patterns in C++, B.R.Priess, John Wiley

Outcomes:

- Ability to identify the appropriate data structure for given problem.
- Graduate able to design and analyze the time and space complexity of algorithm or program.
- Ability to effectively use compilers includes library functions, debuggers and trouble shooting.

(A1005)SOFT SKILLS & PROFESSIONAL ETHICS

B.Tech(CSE) III Semester

L T P C 2 0 0 0

MODULE 1. BUSINESS COMMUNICATION SKILLS

- English Language Enhancement
- The Art of Communication

OBJECTIVE

- The student will gain a functional understanding of basic English Grammar
- Practice language skills to eliminate errors in pronunciation and sentence construction
- Understand and enhance interpersonal communication proces

MODULE 2. INTRAPERSONAL & INTERPERSONAL RELATIONSHIP SKILLS

- Intrapersonal Relationships
- Interpersonal Relationships – To be an Effective Team Player

OBJECTIVE

- The student will understand the importance of and the various skills involved in developing enriching interpersonal relationships
- Be more aware of his/her own self – confidence, values
- Understand and handle emotions of self and others.
- Understand the necessity and importance of working together as a team
- Learn how to go about being a good team player and form an effective team
- Have put their team building skills to test in the various activities to understand where they stand and improve themselves with each succeeding activity.

MODULE 3. CAMPUS TO COMPANY

- Corporate Dressing
- Corporate Grooming
- Business Etiquette
- Communication Media Etiquette

OBJECTIVE

- The student will understand what constitutes proper grooming and etiquette in a professional environment.
- Have some practical tips to handle him/her in a given professional setting.
- Have practiced the skills necessary to demonstrate a comfort level in executing the same.

MODULE 4. GROUP DISCUSSIONS, INTERVIEWS AND PRESENTATIONS

- Group Discussions
- Interviews
- Presentations

OBJECTIVE

- The student will be able to appreciate the nuances of the Group Decision-making process.
- Understand the skills tested and participate effectively in Group Discussions.
- Learn the basics of how to make an effective presentation and have numerous practice presentations in small groups and larger audiences.
- Attend any type of interview with the confidence borne out of knowledge gained and practice sessions.

MODULE 5. ENTREPRENEURIAL SKILLS DEVELOPMENT

- Goal Setting
- Entrepreneurial Skills – Awareness and Development

OBJECTIVE

- The student will be able to set specific measurable goals for themselves in their personal and/or professional life.
- Understand the skills and the intricacies involved in starting an entrepreneurial venture.

REFERENCES

1. UNLEASH the power within….Soft Skills – Training Manual (Infosys Campus Connect)

(A1010) PROBABILITY AND STATISTICS

B.Tech(CSE) - IV Semester

L T P C 4 0 0 4

Objectives:

1. To learn functions of many random variables.
2. Correlation expresses a relation between two set of variables.
3. To test some hypothesis about parent population from which the sample is drawn.
4. Learn about queuing system.
5. Learn about applications of Markov chain.

UNIT-I :

Probability& Random variables: Sample space and events- Probability - The axioms of probability - Some Elementary theorems - Conditional probability –Bayee's theorem. Random variables -discrete and continuous.Moment generating function of probability distribution.

UNIT-II :

Distribution& Estimation: Binomial, Poison &normal distributions, Normal distribution related properties. Moment generating functions of the above three distributions and hence finding the mean and variance.

Sampling distributions - sampling distributions of means (σ known and unknown). Point estimation - interval estimations Bayesian estimation.

UNIT-III :

Test of Hypothesis: Test of hypothesis Large samples, Null hypothesis- Alternative hypothesis type-I & II errors- critical region confidential interval for mean testing of single variance. Difference between the mean. Confidential interval for the proportions. Tests of hypothesis for the proportions single and difference between the proportions.

Small samples: Confidence interval for the t-distribution- tests of hypothesis - t -distributions, F-distribution, χ^2- distribution.

UNIT-IV :

Correlation regression & ANOVA : Coefficient of correlation-regression coefficient- the lines of regression - the rank correlation. ANOVA for one-way, two-way classification.

UNIT-V:

Queuing Theory& Time series analysis: Arrival theorem- Pure Birth and Death Process M/M/1 Model. Utility of time series analysis, components of time series. Preliminary adjustments before analyzing time series.

Text Books:

1. Advanced Engineering Mathematics by R.K. Jain &S.R.K. Iyengar, 3rd edition, Narosa Publishing House, Delhi.
2. Fundamentals of Mathematical Statistics byS.C.Gupta&VKKapoor, 11th Edition, Sultan Chand& Sons.

References:

1. Probability & Statistics, T. K. V. Iyengar, B. Krishna Gandhi and Others, 2014 Yr Edition S. Chand.
2. Probability & Statistics, D. K. Murugeson& P. Guru Swamy, Anuradha Publishers
3. Probability & Statistics for engineers by G.S.S. BhismaRao, Scitech publications.
4. Probability & Statistics, by William Mendenhall & others Cengage pub.
5. Higher engineering mathematics by B S Grewal, Khanna pub.
6. A first course in probability & statistics by BL.S.Prakasarao. 1st Edition, World scientific. Publishing Co. P. Ltd.
7. Probability & Statistics for Engineers, Miller and John E. Freund, Prentice Hall of India.

Outcomes:

1. The students be able to differentiate among many random variables involved in the probability models &calculating probabilities
2. The students be able to know two sets of variable having relation by using correlation methods.
3. The students be able to students draw inferences about the hypothesis statement.
4. The students be able to acquire the skill of using queuing techniques.
5. The students be able to understand about the random process, Markov process and Markov chains which are essentially models of many time dependent processes such as signals in communications, time series analysis, queuing system.

(A1506)COMPUTER NETWORKS

B.Tech (CSE) - IV Semester

L T P C 4 1 0 4

Objectives:

- To introduce the fundamental various of computer networks.
- To determine the TCP/IP and OSI models with merits and demerits.
- To explore the various layers of OSI Model
- To introduce UDP and TCP Models.

UNIT I:

Introduction: Protocol, Networks, Layering Scenario, TCP/IP Protocol, Protocol Suite: The OSI Model, Internet History Standards and administration; Comparison of the OSI and TCP/IP Reference Model.

Physical Layer: Data Transmission**-** Guided Transmission media, Wireless Transmission media.

Data Link Layer: Design Issues, CRC Codes, Elementary Data Link Layer Protocols, Sliding Window Protocol.

UNIT II:

Multiple Access Protocols: ALOHA, CSMA, Collision free protocols, Ethernet- Physical Layer, Ethernet Mac Sub layer, Data Link layer switching & use of bridges, learning bridges, spanning tree bridges, repeaters, hubs, switches, routers and gateways.

UNIT III:

Network Layer: Design Issues, Store and Forward Packet Switching, Connection less and Connection Oriented networks, Routing Algorithms- Optimality principle, Shortest Path, Flooding, Distance Vector routing, Count to Infinity Problem, Hierarchical routing, Congestion Control Algorithms, Admission control.

UNIT IV:

Internetworking: Tunneling, Internet Routing, Packet fragmentation, IPV4, IPV6 Protocol, IP Addresses, CIDR, IMCP, ARP, RARP, DHCP.
Transport Layer: Services provided to the upper layers elements of transport protocol-addressing connection establishment, Connection release, Crash Recovery.

UNTI V:

The Internet Transport Protocols: Introduction to TCP, The TCP Service Model, The TCP Segment Header, The connection Establishment, The TCP Connection Release, The TCP Connection Management Modeling, The TCP sliding window, The TCP Congestion control, The future of TCP.

Application Layer: Introduction, providing services, Application Layer Paradigms, Client Server Model, Standard Client Server application-HTTP, FTP, Electronic mail, TELNET, DNS, SSH.

TEXT BOOKS:

1.. Computer Networks — Andrew S Tanenbaum, 4th Edition. Pearson Education/PHI

2. William Stallings, Data and Computer Communication, 8th Edition, Pearson Education, Asia-2004.

REFERENCES:

1 An Engineering Approach to Computer Networks – S. Keshar, 2nd edition,Person Education

2 Understanding Communications & Networks ,3rd edition ,WA shay ceagage learning

Outcomes:

- Students should be understand and explore the basics of computer networks and various protocols. He/she will be in a position to understand the world wide web concepts.
- Students will be in position to administrate a network and flow of information further he/she can understand easily the concepts of network security, mobile and adhoc networks.

(A1507)FORMAL LANGUAGES AND AUTOMATA THEORY

B. Tech (CSE) - IV Semester

L T P C 4 1 0 4

Objectives:

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

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

UNIT I:

Fundamentals: Strings, Alphabet, Language, Operations, Finite state machine, definitions, finite automaton model, acceptance of strings, and languages, deterministic finite automaton and non deterministic finite automaton, transition diagrams and Language recognizers.

Finite Automata: NFA with Є transitions - Significance, acceptance of languages. Conversions and Equivalence : Equivalence between NFA with and without Є transitions, NFA to DFA conversion, minimization of FSM, equivalence between two FSMs, Finite Automata with output- Moore and Melay machines.

UNIT II:

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

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

UNIT III:

Context Free Grammars: Ambiguity in context free grammars. Minimization of Context Free Grammars. Chomsky normal form, Greiback normal form, Pumping Lemma for Context Free Languages. Enumeration of properties of CFL (proofs omitted).

Push down Automata: Push down automata, definition, model, acceptance of CFL, Acceptance by final state and acceptance by empty state and its equivalence. Equivalence of CFL and PDA, inter conversion. (Proofs not required). Introduction to DCFL and DPDA.

UNIT IV:

Turing Machine: Turing Machine, definition, model, design of TM, Computable functions, recursively enumerable languages. Church's hypothesis, counter machine, decidability types of Turing machines (proofs not required). Linear bounded automata & Context Sensitive Language.

UNIT V:

Computability Theory: Chomsky hierarchy of languages, linear bounded automata and context sensitive language, LR(0) grammar, decidability of, problems, Universal Turing Machine, undecidability of posts. Correspondence problem, Turing reducibility, Definition of P and NP problems, NP complete and NP hard problems.

TEXT BOOKS:

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

REFERENCE BOOKS:

1. Introduction to Formal Languages Automata Theory & Computation kamala krithivasan Rama
2. Introduction to languages and the Theory of Computation ,John C Martin, TMH
3. Theory of Computer Science and Automata languages and computation -Mishra and Chandrashekaran, 2nd edition, PHI
4. Theory of Computation: A problem Solving Approach Kavi Mahesh Wiley India Pvt Ltd

Outcomes:

- Graduate should be able to understand the concept of abstract machines and their power to recognize the languages.
- Attains the knowledge of language classes & grammers relatationship among them with the help of Chomsky hierarchy.
- Graduate will be able to understanding the pre-requisites to the course compiler or advanced complier design.

(A1508)OPERATING SYSTEMS

B. Tech (CSE)- IV Semester

L T P C 4 0 0 4

Objectives:

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

UNIT – I:

Operating System Introduction: Operating System Objectives and functions, Computer System Architecture, OS Structure, OS Operations, Evaluation of Operating Systems- Simple Batch, Multi programmed, Time-shared, Personal Computer, Parallel, Distributed Systems, Real-Time Systems, Special Purpose Systems, OS Services, User OS Interface, System Calls, Types of System Calls, System Programs, Operating System Design and Implementation, OS Structure, Virtual Machines.

UNIT – II:

Process and CPU Scheduling – Process concepts-The Process, Process State, Process Control Block, Threads, Process Scheduling-Scheduling Queues, Schedulers, Context switching, Preemptive Scheduling, Dispatcher, Scheduling Criteria, Scheduling algorithms, Multiple-Processor Scheduling, Real –time Scheduling, Thread Scheduling, Case Studies: Linux, windows.

Process coordination–Process synchronization, The Critical Section problem, Peterson‘s solution, Synchronization Hardware, Semaphores, and Classic Problems of Synchronization, Monitors, Case Studies: Linux, Android.

UNIT – III:

Memory Management and Virtual memory – Logical & Physical Address space, Swapping, Contiguous Allocation, Paging, Structure of Page Table, Segmentation, Segmentation with Paging, Virtual memory,

Demand paging, Performance of Demand paging, Page Replacement, Page Replacement Algorithms, Allocation of Frames, Thrashing.

UNIT- IV:

File System Interface- The Concept of a File, Access methods, Directory Structure, File System Mounting, File Sharing, Protection, File System Implementation- File System Structure, Allocation methods, Free-space Management, Directory Implementation, Efficiency and Performance.

Mass Storage Structure– Overview of Mass Storage Structure, Disk Structure, Disk Attachment, Disk Scheduling, Disk Management, Swap space Management.

UNIT – V:

Deadlocks – System Model, Deadlock Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection and Recovery from Deadlock.

P**rotection –**System Protection, Goals of Protection, Principles of Protection, Domain of Protection, Access Matrix, Implementation of Access Matrix, Access Control, Revocation of Access Rights, Capability-Based Systems, Language-Based Protection.

TEXT BOOKS:

1. Operating System Principles- Abraham Silberchatz, Peter B. Galvin, Greg Gagne 8TH Edition, John Wiley.
2. Operating Systems – Internals and Design Principles, William Stallings, Sixth Edition, Pearson education.

REFERENCE BOOKS:

1. Modern Operating Systems, Andrew S Tanenbaum 3rdedition Pearson/PHI
2. Operating System A Design Approach-Crowley,TMH

Outcomes:

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

(A1509)DATABASE MANAGEMENT SYSTEMS

B.Tech (CSE)- IV Semester

L T P C 4 1 0 4

Objectives:

- To understand the basic concepts and the applications of database systems.
- To master the basics of SQL and construct queries using SQL.
- To understand the relational database design principles.
- To become familiar with the basic issues of transaction processing and concurrently control.
- To become familiar with database storage structures and access technologies.

UNIT I:

Introduction: Data base System Applications, Purpose of Database Systems, View of Data – Data Abstraction –Instances and Schemas – data Models – the ER Model – Relational Model – Other Models – Database Languages – DDL – DML – database Access for applications Programs – data base Users and Administrator, History of data base systems

Introduction to Data base design and ER diagrams – ER Model - Entities, Attributes and Entity sets – Relationships and Relationship sets – Additional features of ER Model – Conceptual Design with ER model – Conceptual Design for Large Enterprise.

Introduction to the Relational Model, Integrity constraints over Relations, Enforcing Integrity Constraints, Query Relational Data, Logical database Design, Introduction to views- Destroying/ altering tables & Views

UNIT II:

Relational Algebra & Calculus– Selection and projection set operations – renaming – Joins – Division – Examples of Algebra overviews – Relational calculus – Tuple relational Calculus – Domain relational calculus – Expressive Power of Algebra and calculus.

Form of Basic SQL Query- Examples of SQL Queries – introduction to Nested Queires, Correlated Nested Queries, Set comparison Operators, Aggregate Operators, Null values comparison, using Null values, logical connectives, AND, OR & NOT Impact on SQL constructs, Outer Joins,

Disallowing Null Values, and Complex Integrity constraints in SQL Triggers and Active Data bases.

UNIT III:

Introduction to Schema Refinement – Problems Caused by redundancy, Decompositions – Problem related to decomposition, Functional Dependencies - Reasoning about FDS, Normal Forms – FIRST,SECOND, THIRD Normal forms – BCNF –Properties of Decompositions- Loss less-join Decomposition, Dependency preserving Decomposition, Schema Refinement in Data base Design – Multi valued Dependencies – FOURTH Normal Form, Join Dependencies, FIFTH Normal form, Inclusion Dependencies

UNIT IV:

Transaction management Transaction Concept- Transaction State-Implementation of Atomicity and Durability – Concurrent – Executions – Serializability- Recoverability – Implementation of Isolation – Testing for serializability-

Concurrency control-Lock –Based Protocols – Timestamp Based Protocols- Validation- Based Protocols – Multiple Granularity.

Recovery System- Failure classification, storage structure, Recovery & atomicity, Log – Based Recovery – Recovery with Concurrent Transactions – Buffer Management – Failure with loss of nonvolatile storage-Advance Recovery systems- Remote Backup systems.

UNIT V:

Overview of Storage and Indexing: Data on External Storage, File Organization and Indexing – Clustered Indexes, Primary and Secondary Indexes, Index data Structures – Hash Based Indexing, Tree based Indexing, Comparison of File Organizations. Storing data: Disks and Files: -The Memory Hierarchy – Redundant Arrays of Independent Disks.

Tree Structured Indexing: Intuitions for tree Indexes, Indexed Sequential Access Methods (ISAM) B+Trees: A Dynamic Index Structure, Search, Insert, and Delete.

Hash Based Indexing: Static Hashing, Extendable hashing, Linear Hashing, Extendible Vs. Linear Hashing.

Textbooks:

1. Data base Management Systems, Raghu Ramakrishnan, Johannes Gehrke, TMH, 3rd Edition, 2003.

2. Data base System Concepts, A.Silberschatz, H.F. Korth, S.Sudarshan, McGraw hill, VI edition, 2006.
3. Fundamentals of Database Systems 5th edition, Ramez Elmasri, Shamkant B.Navathe, Pearson Education, 2008.

References:

1. Database Management System Oracle SQL and PL/SQL, P.K.Das Gupta, PHI.
2. Database System Concepts, Peter Rob & Carlos Coronel, Cengage Learning, 2008.
3. Database Systems, A Practical approach to Design Implementation and Management Fourth edition, Thomas Connolly, Carolyn Begg, Pearson education.
4. Database-Principles,Programming,andPerformance,P.O'Neil,E.O'Neil, 2nd Edition Elesevier
5. Fundamentals of Relational Database Management Systems, S. Sumathi, S. Esakkirajan, Springer.
6. Introduction to Database Management, M.L.Gillenson and others, Wiley Student Edition.
7. Database Development and Management, Lee Chao, Auerbach publications, Taylor & Francis Group.
8. Introduction to Database Systems, C.J .Date, Pearson Education.

Outcomes:

- Demonstrate the basic elements of a relational database management system.
- Ability to identify the data models for relevant problems.
- Ability to design entity relationship and convert entity relationship diagrams into RDBMS and formulate SQL queries on the respect data.
- Apply normalization for the development of application softwares.

(A1554) JAVA PROGRAMMING

B. Tech (CSE) - IV Semester

L T P C 4 1 0 4

Objectives:

- To understand object oriented programming concepts and applications in problem solving.
- Learn the Java programming language: its syntax, idioms, patterns, and styles.
- Become comfortable with object oriented programming: Learn to think in objects.
- Learn the essentials of the Java class library, and learn how to learn about other parts of the library when you need them.
- To learn the basics of java console and GUI based programs.
- Introduce event driven Graphical User Interface (GUI) programming.

Unit I:

OOP concepts- Data Abstraction, encapsulation, inheritance, benefits of inheritance, polymorphism, classes and object, Procedural and object oriented programming paradigms

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

Unit II:

Inheritance: Inheritance hierarchies super and sub classes, member access rules, super keyword, and preventing inheritance: final classes and methods, the object class and its methods.

Polymorphism: dynamic binding, method overloading, abstract classes and methods. **Interface:** interface vs. Abstract classes, defining an interface, implementing interfaces, accessing implementations through interfaces references, extending interface.

Packages: Defining, creating and accessing a package, understanding CLASSPATH, importing packages

Unit III:

Exception Handling: Dealing with errors, benefits of exception handling, the classification of exceptions, exception hierarchy, checked exceptions and unchecked exception, usage of try , catch, throw, throws, and finally, re-throwing exceptions, exception specification, built in exceptions, creating own exception sub classes.

Multithreading- difference between multiple processes and multiple threads, thread states, creating threads, interrupting threads, thread priorities, synchronizing threads, inter-thread communication, producer consumer pattern.

Unit IV:

Collection framework in JAVA- Introduction to java collections, Overview of JAVA collection frame work, generics, commonly used collection classes array list, vector, hash table, stack, enumeration, iterator, string tokenizer, random, scanner, calendar, and properties.

Files- Streams, byte streams, character streams, text input/output, binary input/output, random access file operations file management using file, class.

Connecting to database- JDBC type 1 to 4 drivers, connecting to a database, querying a database and processing the results, updating data with JDBC.

Unit V:

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

Event Handling: Events, Event sources, Event classes, Event Listeners, Relationship between Event sources and Listeners, Delegation event model, examples: handling a button click, handling mouse events, Adapter classes.

Applets: Inheritance hierarchy for applets, differences between applets and applications, life cycle of an Applet, passing parameters to applets, applet security issues.

Textbooks:

1. Java the complete reference ,7th edition,Herbert schildt,TMH
2. Understanding oop with Java,updated edition,T.Budd,pearson education

References:

1. Java for programming, P.J.Dietel Pearson education (OR) Java: How to Program P.J.Dietel and H.M.Dietel, PHI
2. Object Oriented Programming through java, P.Radha Krishna, Universities Press.
3. Thinking in Java, Bruce Eckel, Pearson Education
4. Programming in Java, S.Malhotra and S.Choudhary, Oxford University Press.
5. Java Fundamentals- A Comprehensive introduction, Herbert schildtand Dale skrien, TMH

Outcomes:

- Understanding of OOP concepts and basics of java programming (Console and GUI Based)
- Understand the format and use of objects.
- Understand basic input/output methods and their use.
- The skills to apply OOP and java Programming in problem solving.
- Should have the ability to extend his/her knowledge of java programming future on his/her own.
- Understand object inheritance and its use.
- Understand development of JAVA applets vs. JAVA applications.
- Understand the use of various system libraries.

(A1546)JAVA PROGRAMMING LAB

B.Tech IV Sem

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
- To introduce java compiler and eclipse platform
- To import hand on experience with java programming

Objectives:

- To introduce java compiler and eclipse platform
- To import hand on experience with java programming

Note:

- Use Linux and MySQL for the Lab experiments. through not mandatory, encourage the use of Eclipse platform
- The list suggests the minimum program set.Hence,the concerned staff is requested to add more problems to the list as needed.

1. Use Eclipse or Netbean platform and acquaint with the various menus. Create a test project, add a test class and run it. See how you can use auto suggestions, auto fill. Try code formatter and code refactoring like renaming variables, methods and classes. Try debug step by step with a small program of about 10 to 15 lines which contains at least one if else condition and a for loop .

2. 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 results. Handle any possible exceptions like divided by zero.

3. a. Develop an applet in java that displays a simple message.
   b. Develop an applet in java that receives an integer in one text field, and computes its
   factorial value and returns it in another text field, when he button names\d “Compute”
   is clicked.

4. Write a java program that creates a user interface to perform integer divisions. The user enters two numbers in the text fields, num1 and Num2. The division of Num1 and Num2 is displayed in the result fields when the division button is clicked. If Num1 or Num2 were not an integer, the program would throw a Number Format Exception. If Num2 were Zero the program would throw an Arithmetic Exception. Display the exception in a message dialog box.

5. Wite a java progam that implements a multi-thread application that has three threads. First thread generates random integer every 1 second and if the value is even , second thread computes the square of the number and prints. If the value is odd, the third thread will print the value of cube of the number.

6. Write a java program that connects to a data base using JDBC and does add, delete , modify and retrieve operations.

7. Write a java program that simulates a traffic light. The program lets the user select one of three lights: red yellow,or green with radio buttons. On selecting a button, an appropriate message with "Stop" o "ready" or "Go" should appear above the buttons in selected color.Initially, there is no message shown.

8. Write a java program to create an abstract class named shape that contains two integers and an empty mehod named printarea(). Provide three classes named Rectangle, Traingle and Circle such that each one of the classes extends the class Shape. Each one of the classes contains only the method printarea() that prints the area of the gien shape.

9. 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 a table. The elements are separated by commas. Write a java program to display the table using Labels in Grid Layout.

10. Write a java program that handles all mouse events and shows the event name at the center of the window when a mouse event is fired (Use Adapter classes).

11. Write a java program that loads names and phone numbers from a text file where the data is organized as one line per record and each field in a record are separated by a tab(\t). it takes a name or phone number as input and prints the corresponding other value from the hash table (hint : use hash tables).

12. Implement the above program with database instead of atext file.

13. Write a java program that takes tab separated data(one record per lin) from a text file and inserts them into a database.

14. Write a java program that prints the meta-data of a given table.

Outcomes:

- Basics of Java Programming, Multi-Threaded Programs and Exceptions Handling.
- The skills to apply OOP in java programming in problem solving.
- Ability to access data from a DB with java programming.
- Use of GUI components(Console and GUI bases).

Textbooks:

1. Java Fundamentals- A Comprehensive introduction, Herbert schildtand Dale skrien, TMH.

References:

1. Java for programming, P.J.Dietel Pearson education (OR) Java: How to Program P.J.Dietel and H.M.Dietel, PHI

2. Object Oriented Programming through java, P.Radha Krishna, Universities Press.

3. Thinking in Java, Bruce Eckel, Pearson Education

4. Programming in Java, S.Malhotra and S.Choudhary, Oxford University Press.

(A1547) DATABASE MANAGEMENT SYSTEMS LAB

B.Tech IV Sem

Objectives:

- To teach the student database design and query and PL/SQL.
- To get the Knowledge on Normalization
- To get the Knowledge on Data Integrity

Experiment 1: Working with ER Diagram and Normalization
Example: ER Diagram for Sailors Database
Entities:
1. Sailor
2. Boat
Relationship: Reserves
Primary Key Attributes:
1. SID (Sailor Entity)
2. BID (Boat Entity)

Experiment 2: Working with DDL, DML, DCL and Key Constraints
Creation, Altering and Dropping of Tables and Inserting Rows into a Table (Use Constraints While Creating Tables) Examples Using Select Command.

Experiment 3: Working with Queries and Nested QUERIES
Queries (along with sub Queries) using ANY, ALL, IN, EXISTS, NOTEXISTS, UNION, INTERSET, Constraints

Experiment 4: Working with Queries USING Aggregate Operators & views
Queries using Aggregate Functions (COUNT, SUM, AVG, MAX and MIN), GROUP BY, HAVING and Creation and Dropping of Views

Experiment 5: Working with Conversion Functions & String Functions
Queries using Conversion Functions (to_char, to_number and to_date), String Functions (Concatenation, lpad, rpad, ltrim, rtrim, lower, upper, initcap, length, substr and instr), Date Functions (Sysdate, next_day, add_months, last_day, months_between, least, greatest, trunc, round, to_char, to_date)

Experiment 6: Working with Triggers using PL/SQL
Develop Programs using BEFORE and AFTER Triggers, Row and Statement

Triggers and INSTEAD OF Triggers

Experiment 7: Working with PL/SQL Procedures
Programs Development using Creation of Procedures, Passing Parameters IN and OUT of PROCEDURES

Experiment 8: Working with LOOPS using PL/SQL and Exception Handling
Program Development using WHILE LOOPS, Numeric FOR LOOPS, Nested Loops using ERROR Handling, BUILT-IN Exceptions, USE Defined Exceptions, RAISE- APPLICATION ERROR

Experiment 9: Working with Functions Using PL/SQL
Program Development using Creation of Stored Functions, Invoke Functions in SQL Statements and Write Complex Functions.

Experiment 10: Working with CURSORS
Develop Programs using Features Parameters in a CURSOR, FOR UPDATE CURSOR, WHERE CURRENT of Clause and CURSOR Variables

Outcomes: After the completion of the course, the students would be able to:

- Ability to working DDL,DML,DCL Commands
- Ability to normalize database
- Ability to working with GUI

Textbooks:

1. Oracle PL/SQL by Example, Benjamin Rosenzweig, Elena Silvestrova, Pearson Education 3rd Edition
2. Oracle Database LogG PL/SQL Programming, Scott Urman, Tata Mc-Graw Hill.
3. SQL and PL/SQL for Oracle 10g, Black Book, Dr .P.S. Deshpande.

CMR COLLEGE OF ENGINEERING & TECHNOLOGY

(AUTONOMOUS)

B. Tech (CSE) Course Structure

I SEMESTER

Subject Code	Group	Subject	L	T	P	Credits
A1001	H&S	English- I	2	0	0	2
A1006	H&S	Linear Algebra & Calculus	4	1	0	4
A1007	H&S	Advanced Calculus	4	1	0	4
A1013	H&S	Engineering Physics-I	4	0	0	4
A1016	H&S	Engineering Chemistry	4	0	0	4
A1501	CSE	Computer Programming through 'C'	4	1	0	4
A1542	CSE	Computer Programming Lab	0	0	3	2
A1019	H&S	Engineering Chemistry Lab	0	0	3	2
A1003	H&S	English Language Communication Skills Lab	0	0	3	2
		Total Credits	22	3	9	28

II SEMESTER

Subject Code	Group	Subject	L	T	P	Credits
A1002	H&S	English - II	2	0	0	2
A1008	H&S	Mathematical Methods	4	1	0	4
A1014	H&S	Engineering Physics-II	3	0	0	3
A1017	H&S	Advanced Engineering Chemistry	3	0	0	3
A1502	CSE	Data Structures through 'C'	4	1	0	4
A1306	ME	Engineering Drawing	3	0	3	4
A1543	CSE	Data Structures Lab	0	0	3	2
A1015	H&S	Engineering Physics Lab	0	0	3	2
A1544	CSE	IT Workshop	0	0	3	2
A1303	ME	Engineering Workshop	0	0	3	2
		Total Credits	19	2	15	28

III SEMESTER

Subject Code	Group	Subject	L	T	P	Credits
A1503	CSE	Mathematical Foundations of CS	4	0	0	4
A1504	CSE	Advanced Data Structures through C++	4	1	0	4
A1020	H&S	Environmental Studies	4	0	0	4
A1505	CSE	Computer Organization	4	1	0	4
A1443	ECE	Digital Logic Design	4	1	0	4
A1244	EEE	Basic Electrical & Electronics	4	1	0	4
A1245	EEE	Electrical & Electronics Lab	0	0	3	2
A1545	CSE	Advanced Data Structures through C++ Lab	0	0	3	2
A1005	H&S	Soft Skills & Professional Ethics	2	0	0	0
		TOTAL	26	4	6	28

IV SEMESTER

Subject Code	Group	Subject	L	T	P	Credits
A1010	H&S	Probability & Statistics	4	0	0	4
A1506	CSE	Computer Networks	4	1	0	4
A1507	CSE	Formal Languages & Automata Theory	4	1	0	4
A1508	CSE	Operating Systems	4	0	0	4
A1509	CSE	Database Management Systems	4	1	0	4
A1554	CSE	JAVA Programming	4	1	0	4
A1546	CSE	Java Programming Lab	0	0	3	2
A1547	CSE	DBMS Lab	0	0	3	2
		TOTAL	24	4	6	28

V SEMESTER

Subject Code	Group	Subject	L	T	P	Credits
A1511	CSE	Design & Analysis of Algorithms	4	0	0	4
A1512	CSE	Compiler Design	4	1	0	4
A1513	CSE	Software Engineering	4	0	0	4
		ELECTIVE-1				
A1329	H&S	**Operations Research**	4	1	0	4
A1532	CSE	**Android Programming**				
A1411	ECE	**Microprocessor & Microcontrollers**				
A1515	CSE	Web Technologies	4	1	0	4
A1518	CSE	Scripting Languages	4	1	0	4
A1548	CSE	Compiler Design Lab	0	0	3	2
A1549	CSE	Advanced Web Technologies Lab	0	0	3	2
A1011	H&S	Analytical Skills – I	2	0	0	0
		TOTAL	26	5	6	28

VI SEMESTER

Subject Code	Group	Subject	L	T	P	Credits
A1524	CSE	Computer Graphics	4	1	0	4
A1516	CSE	Information Security	4	0	0	4
A1519	CSE	Data Warehousing & Data Mining	4	1	0	4
		ELECTIVE- II				
A1520	CSE	**.Net and C# Programming**	4	1	0	4
A1521		**Advanced Computer Architecture**				
A1522		**Artificial Intelligence**				
A1523	CSE	Linux Programming	4	1	0	4
A1021	H&S	Managerial Economics & Financial Analysis	4	0	0	4
A1550	CSE	Linux Programming and Data Mining Lab	0	0	3	2
A1004	H&S	Advanced English Communication skills Lab	0	0	3	2
A1012	H&S	Analytical Skills - II	2	0	0	0
		TOTAL	26	4	6	28

VII SEMESTER

Subject Code	Group	Subject	L	T	P	Credits
A1517	CSE	Mobile Computing	4	1	0	4
A1531	CSE	Information Retrieval System	4	1	0	4
		ELECTIVE- III				
A1525	CSE	Middleware Technologies	4	1	0	4
A1527		Semantic Web & Social Networking				
A1514		Computer Forensics				
A1529	CSE	Cloud Computing	4	1	0	4
A1421	ECE	Embedded Systems Design	4	0	0	4
A1530	CSE	Big Data Analytics	4	1	0	4
A1551	CSE	Hadoop Lab	0	0	3	2
A1552	CSE	Case Tools &Software Testing Lab	0	0	3	2
		TOTAL	24	4	6	28

VIII SEMESTER

Subject Code	Group	Subject	L	T	P	Credits
A1022	H&S	Management Science	4	0	0	4
A1526	CSE	E Commerce	4	1	0	4
		ELECTIVE- IV				
A1528	CSE	Web Services	4	1	0	4
A1533		Software Project Management				
A1534		Natural Languages Processing				
A1535	CSE	Comprehensive VIVA	0	3	0	2
A1536	CSE	Main Project	0	0	12	10
A1537	CSE	Industry oriented Mini Project	0	0	3	2
A1538	CSE	Technical Seminar	0	3	0	2
		TOTAL	12	8	15	28

Credits upto II Sem	**56**
Credits upto III Sem	84
Credits upto IV Sem	**112**
Credits upto V Sem	**140**
Credits upto VI Sem	**168**
Credits upto VII Sem	196
Credits upto VIII Sem	**224**

Service Subjects offering for other branches

Civil Engineering

Sl. No.	Subject Code	Semester	Subject	L	T	P	Credits
1	A1539	I Sem	C Programming & Data Structures 4	1	0	4	
2	A1510	IV Sem	Object Oriented Programming through JAVA	4	1	0	4
3	A1544	I Sem	IT Workshop 0	0	3	2	
4	A1553	I Sem	C Programming & Data Structures Lab 0	0	3	2	

Mechanical Engineering

Sl. No.	Subject Code	Semester	Subject	L	T	P	Credits
1	A1539	I Sem	C Programming & Data Structures	4	1	0	4
2	A1510	VI Sem	Object Oriented Programming through JAVA	4	1	0	4
3	A1544	I Sem	IT Workshop	0	0	3	2
4	A1553	I Sem	C Programming & Data Structures Lab	0	0	3	2
5		VI Sem	Microprocessors & Java Programming Lab	0	0	3	2

Mechanical Engineering

Sl. No.	Subject Code	Semester	Subject	L	T	P	Credits
1	A1501	I Sem	Computer Programming through 'C'	4	1	0	4
2	A1502	II Sem	Data structures through C	4	1	0	4
3	A1510	VI Sem	Object Oriented Programming through Java Elective	4	1	0	4
4	A1509	VI Sem	Data Base Management Systems(Elective)	4	1	0	4
5	A1505	VI Sem	Computer Organization (Elective)	4	1	0	4
6	A1542	I Sem	Computer Programming Lab	0	0	3	2
7	A1543	II Sem	Data structures Lab	0	0	3	2
8	A1544	II Sem	IT Workshop	0	0	3	2

Mechanical Engineering

Sl. No.	Subject Code	Semester	Subject	L	T	P	Credits
1	A1501	I Sem	Computer Programming through 'C'	4	1	0	4
2	A1502	II Sem	Data structures through C	4	1	0	4
3	A1510	VI Sem	Object Oriented Programming through JAVA	4	1	0	4
4	A1540	V Sem	Computer Organization & Operating Systems	4	0	0	4
5	A1506	VII Sem	Computer Networks	4	1	0	4
6	A1509	VI Sem	Database Management Systems(Elective)	4	1	0	4
7	A1541	VIII Sem	Network Security (Elective)	4	0	0	4
8	A1542	I Sem	Computer Programming 'C' Lab	0	0	3	2
9	A1544	II Sem	IT Workshop	0	0	3	2
10	A1543	II Sem	Data structures Lab	0	0	3	2

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L	T	P	C
4	0	0	4

(A1511) DESIGN AND ANALYSIS OF ALGORITHMS

Objectives:

- To analyze performance of algorithms.
- To choose the appropriate data structure and algorithm design method for a specified application.
- To understand how the choice of data structures and algorithm design methods impacts the performance of programs.
- To solve problems using algorithm design methods such as the greedy method, divide and conquer, dynamic programming, backtracking and branch and bound.
- Prerequisites (subjects) Data structures , Mathematical foundations of computer science.

Unit I:

Introduction: Algorithm, pseudo code for expressing algorithms, Performance Analysis: Space and Time Complexity, Asymptotic Notation: Big Oh Notation, Omega Notation, Theta Notation, Little oh and Little omega Notation, Masters theorem (only statement) for Recurrence Relations.

Divide and Conquer: General Method, applications-Binary Search, Finding Maximum and Minimum, Quick Sort, Selection Sort, Merge Sort, Strassen's Matrix Multiplication.

Unit II:

Searching & Traversal Techniques: Efficient Non recursive binary tree traversal algorithms, Heap Sort, Disjoint set operations ,union & find algorithms, spanning trees, Graph Traversals-Breadth first search and Depth first search, AND/OR graphs, game trees, Connected Components, Bi-Connected Components.

Unit III:

Greedy Method: General Method, applications-Job sequencing with deadlines, Knapsack problem, Minimum Cost Spanning Trees, Single Source Shortest Path Problem, and Optimal Storage on tapes, Optimal merge patterns.

Dynamic Programming: General Method, applications-Multistage Graphs, Optimal Binary Search trees, 0/1 Knapsack problem, All Pair Shortest path problem, Travelling Sale person problem, Reliability Design.

Unit IV:

Backtracking: General Method, applications-N-Queen Problem, Sum of Subset Problem, Graph Coloring, Hamilton Cycle.

Branch&Bound: General Method, applications-Travelling sales person problem, 0/1 Knapsack Problem: LC Branch bound solution, FIFO Branch bound solution.

Unit V:

NP-Hard and NP-Complete Problems: Basic Concepts, Nondeterministic Algorithms, Cook's Theorem(only statement), NP-Hard Graph Problems, NP-Hard Scheduling Problems, NP-Hard Code Generation Problems.

Textbooks:

1. Fundamentals of Computer Algorithms, Ellis Horowitz, Satraj Sahni and Rajasekharam, Galgotia.
2. Algorithm Design: Foundations, Analysis and Internet examples, M.T.Goodrich and R.Tomassia,Johnwiley and sons.
3. Design and Analysis Algorithms-Parag Himanshu Dave, Himanshu Bhalchandra Dave, publisher:Pearson.

References:

1. Introduction to Algorithms, secondedition, T.H.Cormen, C.E.Leiserson, R.L.Rivest,andC.Stein,PHI Pvt. Ltd./ Pearson Education
2. Introduction to Design and Analysis of Algorithms A strategic approach, R.C.T.Lee, S.S.Tseng, R.C.Chang and T.Tsai, McGraw Hill.
3. Data structures and Algorithm Analysis in C++, Allen Weiss, Second edition, Pearson education.
4. Design and Analysis of algorithms, Aho, Ullman and Hopcroft,Pearson education.
5. Algorithms – Richard Johnson baugh and Marcus Schaefer, PearsonEducation

Outcomes:

- Be able to analyze algorithm and improve the efficiency of algorithms.
- Apply different designing methods for development of algorithms to realistic problems, such as divide and conquer, greedy and etc.
- Ability to understand and estimate the performance of algorithm.

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L	T	P	C
4	1	0	4

(A1512) COMPILER DESIGN

Objectives:

- To describe the steps and algorithms used by language translations.
- To discuss the effectiveness of optimization.
- To explain the machine dependent aspects of compilation.

Unit I:

Overview of Compilation: Transformation Process of an Input Source File into an Executable, Phases of Compilation, Lexical Analysis, Lex Specifications, Structure of a Lex Specification File, Regular Grammar and Regular Expression for Common Programming Language Features, Pass and Phases of Translation, Interpretation, Bootstrapping, Data Structures in Compilation – LEX Lexical Analyzer Generator.

Top Down Parsing: Context Free Grammars, Top Down Parsing – Backtracking, LL(1), Recursive Descent Parsing, Predictive Parsing, Preprocessing Steps Required for Predictive Parsing.

Unit II:

Bottom Up Parsing: Shift Reduce Parsing, LR and LALR Parsing, Error Recovery in Parsing, Handling Ambiguous Grammar, YACC – Automatic Parser Generator.

Unit III:

Semantic Analysis: Intermediate Forms of Source Programs – Abstract Syntax Tree, Polish Notation and Three Address Codes. Attributed Grammars, Syntax Directed Translation, Conversion of Popular Programming Languages Language Constructs into Intermediate Code Forms, Type Checker.

Symbol Table: Symbol Table Format, Organization for Block Structures Languages, Hashing, Tree Structures Representation of Scope Information. Block structures and Non-Block Structure Storage Allocation: Static, Runtime Stack and Heap Storage Allocation, Storage Allocation for Arrays, Strings and Records.

Unit IV:

Code Optimization: Consideration for Optimization, Scope of Optimization, Local Optimization, Loop Optimization, Frequency Reduction, Folding, DAG Representation.

Data Flow Analysis: Flow Graph, Data Flow Equation, Global Optimization, Redundant Sub Expression Elimination, Induction Variable Elements, Live Variable Analysis, Copy Propagation. Data Flow Equations for Backward Flow Control-Computing Definitions, Available Expressions, Live Variables.

Unit V:

Object Code Generation: Object Code Forms, Machine Dependent Code Optimization, Register Allocation and Assignment Generic Code Generation Algorithms, DAG for Register Allocation.

Textbooks:

1. Principles of Compiler Design, A.V. Aho . J.D.Ullman; Pearson Education.
2. Modern Compiler Implementation in C, Andrew N. Appel, Cambridge University Press.
3. Principles of Compiler Design, V Raghavan, Tata McGraw Hill.

References:

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

Outcomes:

- Ability to understand the design of a compiler given feature of the languages.
- Abilty to implement aspects of automata theory.
- Gain knowledge of powerful compiler generation tools.

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(A1513) SOFTWARE ENGINEERING

Objectives:

- To understand of software process models such as waterfall and evolutionary models.
- To understand of software requirements and SRS documents.
- To understand of different software testing approaches such as unit testing and integration testing.
- To understanding on quality control and how to ensure good quality software.

UNIT I :

Introduction to Software Engineering : The evolving role of software, Changing Nature of Software, Software myths.

A Generic view of process : Software engineering- A layered technology, a process framework, The Capability Maturity Model Integration (CMMI), Process patterns, process assessment, personal and team process models.

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

UNIT II :

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

Requirements engineering process: Feasibility studies, Requirements elicitation and analysis, Requirements validation, Requirements management.

System models: Context Models, Behavioral models, Data models, Object models, structured methods

UNIT III:

Design Engineering: Design process and design quality, Design concepts, the design model, pattern based software design.

Creating an architectural design : Software architecture, Data design, Architectural styles and patterns, Architectural Design, Assessing alternative architectural design, mapping data flow into a software architecture.

Modeling component level design: Designing class based components, conducting component level design, Object constraint language, designing conventional components.

Performing User interface design: Golden rules, User interface analysis and design, interface analysis, interface design steps, Design evaluation.

UNIT IV :

Testing Strategies: A strategic approach to software testing, test strategies for conventional

software, Black-Box and White-Box testing, Validation testing, System testing, the art of Debugging.

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

Metrics for Process and Products : Software Measurement, Metrics for software quality.

UNIT V :

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

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

TEXT BOOKS :

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

REFERENCES:

1. Software Engineering, A Precise Approach, Pankaj Jalote,Wiley India,2010.
2. Software Engineering: A Primer, Waman S Jawadekar, Tata McGraw Hill, 2008.
3. Fundamentals of Software Engineering, Rajib Mall, PHI, 2005.
4. Software Engineering, Principles and Practices, Deepak Jain, Oxford University Press.
5. Software Engineering 1: Abstracion and modelling, Diner Bjorner, Springer International edition, 2006.
6. Software Engineering 2: Specification of systems and languages, Diner Bjorner, Springer International edition, 2006.
7. Software Engineering Foundations, Yingxu Wang, Auerbach Publications, 2008.
8. Software Engineering Principles and Practice, Hans Van Vliet, 3rd edition, John Wiley &Sons Ltd.
9. Software Engineering 3: Domains, Requirements, and Software Design, D.Bjorner, Springer International Edition.

Outcomes:

- Ability to identify the minimum requirements for the development of application.
- Ability to develop, maintain, efficient, reliable and cost effective software solutions.
- Ability to critically thinking and evaluate assumptions and arguments.

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(A1329) OPEARATIONS RESEARCH
(ELECTIVE -I)

UNIT – I

Development – Definition– Characteristics and Phases – Types of models – Operations Research models – applications.

ALLOCATION: Linear Programming Problem - Formulation – Graphical solution – Simplex method – Artificial variables techniques: Two–phase method, Big-M method; Duality Principle.

UNIT – II

TRANSPORTATION PROBLEM – Formulation – Optimal solution, unbalanced transportation problem – Degeneracy.

Assignment problem – Formulation – Optimal solution - Variants of Assignment Problem; Traveling Salesman problem.

UNIT – III

SEQUENCING – Introduction – Flow –Shop sequencing – n jobs through two machines – n jobs through three machines – Job shop sequencing – two jobs through 'm' machines

REPLACEMENT: Introduction – Replacement of items that deteriorate with time – when money value is not counted and counted – Replacement of items that fail completely- Group Replacement.

UNIT – IV

THEORY OF GAMES: Introduction –Terminology– Solution of games with saddle points and without saddle points- 2 x 2 games –m x 2 & 2 x n games - graphical method – m x n games - dominance principle.

INVENTORY: Introduction – Single item, Deterministic models – Types - Purchase inventory models with one price break and multiple price breaks –Stochastic models – demand discrete variable or continuous variable – Single Period model with no setup cost.

UNIT – V

WAITING LINES: Introduction – Terminology-Single Channel – Poisson arrivals and Exponential Service times – with infinite population and finite population models– Multichannel – Poisson arrivals and exponential service times with infinite population.

DYNAMIC PROGRAMMING:

Introduction – Terminology- Bellman's Principle of Optimality – Applications of dynamic programming- shortest path problem – linear programming problem.

Text books:

1. Operation Research /J.K.Sharma/MacMilan.
2. Introduction to O.R /Taha/PHI

Reference Books:

1. Operations Research: Methods and Problems / Maurice Saseini, Arhur Yaspan and Lawrence Friedman
2. Operations Research /A.M.Natarajan, P.Balasubramaniam, A. Tamilarasi/Pearson Education.
3. Operations Research / Wagner/ PHI Publications.
4. Introduction to O.R/Hillier & Libermann (TMH).

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(A1532) ANDROID PROGRAMMING

UNIT-I

Introducing Android: What is Android?, History of Android, About open Handset Alliance(OHA),Key features of Android, The Android Platform Workflow, Understanding the android versions/levelsThe Android Architecture:Understanding the Android Architecture, the Android Architecture Elements, LinuxKernel, Core APIs, Android Runtime, Dalvik Virtual Machine, Android Application FrameworkConfiguring the Android Application Development Environment:Understanding the Eclipse IDE, Installing Android Development Tool (ADT) plug-in for Eclipse, Installing and exploring the Android SDK tools, configuring an Android virtualDevice (AVD)Creating the Android Application:Creating an Android Project, Understanding the directory structure of Android Project, Inroducing Android Manifest file, Understanding the Emulators, Running the Android Application on Emulator, Debugging the android application, A details analysis of Android Application, Building the Android Package (.apk)

UNIT-II

Introducing Android Components: IntroducingActivity, Understanding Activity Lifecycle, Registering Activity's, Configuring the intent-filter's, working with Intents, Understanding the Service Lifecycle, creating and controlling service, Introducing Broadcast Receivers

Handling Application Resources: IntroducingResources, Types of Resources, Organizing the Resources, Working with String Resources, Working with Boolean Resources, Working with Integer Resources, Working with Color Resources, Working with Image Resources, Working with DrawbleResources, Working with Styles, Themesand Layouts

Multimedia: Working with Audio & Video, Recording and Playing Audio &Video, Working with Ringtones

UNIT-III

Exploring User Interface Elements: Understanding View and its subtypes, Working with View Components (Text View, Edit View,..), Understanding Layout Managers's (Linear Layout, Frame Layout, Relative Layout, Table Layout), Creating User Interface using XML,Creating user interface Programmatically, Working with EventsAdvanced User Interface Elements:Adapters, Menus, Working with Dialog Boxes, Animation, Graphics, WakeLocks, Date Picker, TimePicker

UNIT-IV

Data Storage, File System:Shared Preferences, Customized Preference, File system in Android, Internal Storage, External Storage-SD cardWorking with SQLite:What is SQLite?creating SQLite Database, Closing the database, Dropping database,DML operations on data, Querying the databaseUnderstanding Content Providers:ExploringContentProviders's,UsingContent Providers sharing data between applications, Sharing database across application boundaries,

Working with MediaStoreContentProvider,Working with CallLogContentProvider,Working with User Dictionary ContentProvider,Working with settings ContentProvider,Customized content providers, Manipulating the content provider data

UNIT-V

Working with the Networking and Web APIs: Understanding Mobile Networking, Accessing the web using HTTP, Working with HttpURLConnection, Working with WebView, Working with Webkit, Extending Web Application Functionality to Android, Managing Wi-FiLocation-Based Services (LBS) and Google Map APIs, and Notifications:Working with GPS, Working with LocationManager, Location Providers, Geocoding and Mapping Locations, Working with Notification Manager Service, Working with MapView Bluetooth & Telephony –Calls &SMS: Working with Bluetooth Adapter, Detecting remote devices, paring with devices, communicating over Bluetooth, Accessing the staeinformation, Making and Receiving Phone Calls, Sending & Receiving SMS

TextBooks:

1. Beginning Android™ Application Development by Wei-MengLee,Wiley Publishing, Inc.
2. Beginning Android, Mark L. Murphy, Apress
3. Pro Android by Sayed Y. Hashimi and Satya Komatineni, Apress
4. Android Application Development, Rick Rogers, John Lombardo, Zigurd Mednieks, and Blake Meike, OREILLY
5. Sams Teach Yourself Android™ Application Development in 24 Hours, Lauren Darcey Shane Conder
6. Android Programming Tutorials by Mark L. Murphy, CommonsWare

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B.Tech V - Sem

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(A1411) MICROPROCESSORS AND MICROCONTROLLERS (ELECTIVE - I)

Course Objective:

The Course Objectives are:

- To develop an in-depth understanding of the operation of Microprocessors and Microcontrollers, Machine language programming & Interfacing techniques.

UNIT- I:

8086Architecture: 8086 Architecture-Functional diagram, Register organization, Memory segmentation, programming model, Memory addresses, physical memory organization, Architecture of 8086, signal descriptions of 8086-Common Function Signals, Timing diagrams, Interrupts of 8086.

UNIT- II:

Instruction set and Assembly language programming of 8086: Instruction formats, Addressing modes, Instruction Set, Assembler Directives, Macros, simple Programs involving Logical, Branch and Call Instructions, Sorting, Evaluating Arithmetic Expressions, String Manipulations.

UNIT- III:

I/O Interface: 8255 PPI, Various Modes of Operation and Interfacing to 8086, Interfacing keyboard, Display, D/A and A/D Converter.

Interfacing with advanced devices: Memory interfacing to 8086,Interrupt Structure of 8086,Vector interrupt table, Interrupt service routine.

Communication Interface: Serial Communication Standards, Serial Data Transfer Schemes, 8251 USART Architecture and Interfacing.

UNIT – IV:

Introduction to Microcontrollers: Overview of 8051 Microcontroller, Architecture, I/O Ports, Memory Organization, Addressing Modes and Instruction set of 8051, Simple Programs.

UNIT – V:

8051 Real Time Control: Programming Timer Interrupts, Programming External Hardware Interrupts, Programming the Serial Communication Interrupts, Programming 8051 Timers and Counters.

TEXT BOOKS:

1. D.V. Hall, Micro Processors and Interfacing, TMGH, 2nd edition 2006.

2. Kenneth.J.Ayala,The 8051 Microcontroller, 3rd Ed, Cengage Learning.

REFERENCE BOOKS:

1. Advanced microprocessor and Peripherals - A.K.Ray and K.M.Bhurchandi, TMH, 2nd edition 2006.
2. The 8051 Microcontrollers, Architecture and programming and Applications- K.Uma Rao, AndhePallavi, Pearson, 2009.
3. Micro Computer System 8086/8088 Family Architecture, Programming and Design - By Liu and GA Gibson, PHI, 2nd Ed.
4. Microcontrollers and Application, Aijay.V. Deshmukh, TMGH, 2005.
5. The 8085 Microprocessor: Architecture, Programming and interfacing- K. Uday Kumar,B.S.Umashankar,2008,Pearson.

Course Outcome:

Up on completion of the course:

- The Student will learn the internal organization of popular 8086/8085 Microprocessors/ Microcontrollers.
- The Student will learn hardware and software interaction and integration.
- The student will learn the design of Microprocessors/Microcontrollers-based systems.

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L	T	P	C
0	0	3	2

(A1549) ADVANCED 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 Firefox
3. Tomcat web server and Apache web server ,
4. A database either Mysql or Oracle
5. JVM (Java virtual machine) must be installed on your system

Week-1:

Design the static web pages required for any online services 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, Cart Page etc.

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

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

2) LOGIN PAGE:

This page has to contain Login Form, Forgot Password, and Link to new user Registration Form, back to Home page etc. If the user is authenticated user, can access the web site. Otherwise he has to register.

3) REGISTRATION PAGE:

This page has to contain User Registration form minimum of 10 Fields (use all the form Widgets) If the user is authenticated user, can access the web site.

4) CATOLOGUE PAGE:

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

5) CART PAGE:

Selected list of items has to display in table format & compute cost before submitting. (Use Event Handler functions)

Week -2:

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

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

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

background-image:url(pics/img1.jpg);

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>

Work with layers:

For example:

LAYER 1ON TOP:

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

LAYER 2 ON TOP:

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

Add a customized cursor:

Selector {cursor:value}

For example:

<html>
<head>
<title>HTML CSS</title>
<style type="text/css">
p
{

```
color:purple;
font-size:14pt;
font-style:italic bold;
font-family:'Brush Script MT';
text-decoration:underline;
text-shadow:2px 8px red;
}
</style>
</head>
<body>
<p>This is a cursor:</p>
<a style="cursor:crosshair;fontsize:25px;">crosshair</a><br>
<a style="cursor:default;fontsize:25px;">default</a><br>
<a style="cursor:grab;font-size:25px;">grab</a><br>
<a style="cursor:zoom-in;fontsize:25px;">zoomin</a><br>
<a style="cursor:url;font-size:25px;">url</a><br>
<a style="cursor:pointer;fontsize:25px;">pointer</a><br>
</body>
</html>
```

Week-3:

VALIDATION:

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

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

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

E-mail id (should not contain any invalid and must follow the standard pattern name@domain.com)

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

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

Week-4:

Implement the following web application using PHP

A user validation web application where the user submits the login name and password to the server the name and password are checked against the data already available in the data base and if the data matches a successful login page is returned otherwise a failure message is

shown to the user.

Week-5:

Write an XML file which will display the item (your wish) information which includes the following (for example)

Title of the book

Author Name

ISBN number

Publisher name

Edition

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:

Install TOMCAT web server and APACHE.

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

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:8080/cmrcet/books.html (for tomcat) http://localhost:8080/books.html (for Apache)

Week-7:

User Authentication:

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

Create a Cookie and add these four user id's and passwords to this Cookie.

Read the user id and passwords entered in the Login form 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. Store the user-names and passwords in the webinf.xml and access them in the servlet by using the getInitParameters() method.

Week-8:

Install a database(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).

Practice 'JDBC' connectivity.

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

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

Week-9:

Write a JSP which does the following job:

Insert the details of the 3 or 4 users who register with the web site by using registration form. Authenticate the user when he submits the login form using the user name and password from the database.

Week-10:

Install a database(Mysql).

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 JDBC/ODBC code to connect to that database and extract data from the tables and display them. Experiment with various MySQL 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 .

Text Books:

1. Core Servlets and Java Server Pages VOLUME 1: CORE TECHNOLOGIES By Marty Hall and Larry Brown Pearson.
2. Java Server Pages-Hans Bergsten,SPD O'Reilly

Reference Books:

1. Web Programming, building internet applications, Chris Bates 2nd edition, Wiley Dreamtech
2. Java Script,D.Flanagan,O'Reilly,SPD
3. Beginning Web Programming-Jon Duckett WROX
4. Programming World Wide Web, R.W.Sebesta, Fourth Edition, Pearson.
5. Internet and world wide web-How to program ,Dietel and Nieto,Pearson

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B.Tech V - Sem

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(A1515) WEB TECHNOLOGIES

Objectives:

- To introduce HTML a client side programming language
- To introduce XML and processing of XML Data with Java.
- To introduce Server side programming with Java Servlets and JSP
- To introduce Client side scripting with Javascript and AJAX.

UNIT-I

Introduction to HTML: Common tags; List, Tables, images, forms, frames, CSS, DHTML.

UNIT-II

XML: Introduction to XML , Defining XML tags, their attributes and values, Document type definition, XML Schemas, Document Object Model, XHTML.

Parsing XML data- DOM and SAX parsers in java.

UNIT-III

Introduction to Servlets : Common Gateway Interface (CGI), Lifecycle of a Servlet, deploying a servlet API, Reading Servlet Parameters, Reading Initialization parameters, Handling HTPP Request & Responses Using Cookies and Sessions, connecting to a database using JDBC.

UNIT-IV

The anatomy of a JSP Page, JSP Processing, Declarations, Directives, Expressions, Code Snippets, implicit objects using Beans in JSP Pages, Using Cookies and session for session tracking, connecting to database in JSP.

UNIT-V

Client Side Scripting: Introduction to JavaScript : Java script language- declaring variables, scope of variables, functions, event handlers (Onclick, Onsubmit etc), Document Object Model, Form Validation.

Text Books

1. Web technologies, Uttam K Roy, Oxford University Press.
2. The complete reference PHP - Steven Holzner, Tata McGraw-Hill.

References:

1. Web programming, building intermet applications, Chris Bates 2nd edition, Wiley Dreamtech.
2. Java server Pages - Hans Bergsten, SPD O'Reilly.
3. Java Script - D-Flanagan, O'Reily, SPD.
4. Beginning Web programming - Jon Duckett WROX.
5. Programming World wild web, R.W.Sabesta, Fourth edition, Pearson.
6. Internet and world wide web - How to program, Dietel and Nieto, Pearson.

Outcomes:

- Gain knowledge of client-side scripting, validation of forms and AJAX programming
- Have understanding of server side scripting with PHP language.
- Have understanding of what is XML and how to parse and use XML Data with Java
- To introduce Server side programming with Java Servlets and JSP

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(A1518) SCRIPTING LANGUAGES

Objectives:

The course demonstrates an in depth understanding of the tools and the scripting languages necessary for design and development of applications.

UNIT I

Introduction and overview

Introduction, What is Python, Origin, Comparison, Comments, Operators, Variables and Assignment, Numbers, Strings, Lists and Tuples, Dictionaries, if Statement, while Loop, for Loop and the range() Built-in Function, Files and the open() Built-in Function, Errors and Exceptions, Functions, Classes,Modules.

Syntax and Style

Statements and Syntax, Variable Assignment, Identifiers, Basic Style Guidelines, Memory Management, Python Application Examples.

UNIT II

Lists

Operators, Built-in Functions, List Type Built-in Methods, Special Features of Lists, Tuples, Tuple Operators and Built-in Functions, Special Features of Tuples.

Conditionals and Loops

if statement, else Statement, else if Statement, while Statement, for Statement, break Statement, continue Statement, pass Statement, else Statement.

UNIT III

Python Objects

Python Objects, Standard Types, Other Built-in Types, Internal Types, Standard Type Operators, Standard Type Built-in Functions, Categorizing the Standard Types, Unsupported Types.

Numbers and Strings

Introduction to Numbers, Integers, Floating Point Real Numbers, Complex Numbers, Operators, Built-in Functions. Sequences: Strings, Lists, and Tuples, Sequences, Strings, Strings and Operators, String-only Operators, Built-in Functions, String Built-in Methods, Special Features of Strings.

UNIT IV

Files and Input/output

File Objects, File Built-in Function, File Built-in Methods, File Built-in Attributes, Standard Files, Command-line Arguments, File System, File Execution, Persistent Storage Modules

Regular Expressions

Introduction/Motivation, Special Symbols and Characters for REs, REs and Python.

Programming Exercise: Check for data error in CSV files: Numeric Check, Alphanumeric Check, Email Check, Date Check.

UNIT V

Introduction to PERL and Scripting- Scripts and Programs, Origin of Scripting, Scripting Today, Characteristics of Scripting Languages, Uses for Scripting Languages, Web Scripting, and the universe of Scripting Languages. PERL- Names and Values, Variables, Scalar Expressions, Control Structures, arrays, list, hashes, strings, pattern and regular expressions, subroutines.Advanced PERL- Finer points of looping, pack and unpack, file system, eval, data structures, packages, modules, objects, interfacing to the operating system, Creating Internet ware applications, Dirty Hands Internet Programming, security Issues.

TEXT BOOKS:

1. Chun, J Wesley, Core Python Programming, 2ndEdition, Pearson, 2007 Reprint 2010.
2. The World of Scripting Languages, David Barron, Wiley Publications.
3. Python Web Programming, Steve Holden and David Beazley, New Riders **Publications.**
4. Thomas A Powell, Fritz Schneider, "JavaScript: The Complete Reference", Third Edition, Tata McGraw Hill, 2013.
5. Beginning JavaScript with Dom scripting and AJAX, RussFerguson, Christian Heilmann, Apress.
6. JQuery Cookbook, SPD O'Reilly

REFERENCE BOOKS:

1. Open Source Web Development with LAMP using Linux, Apache, MySQL, Perl and PHP, J.Lee andB.Ware(Addison Wesley) Pearson Education.
2. Programming Python,M.Lutz,SPD.
3. PHP 6 Fast and Easy Web Development, Julie Meloni and Matt Telles, Cengage Learning Publications.
4. PHP 5.1, I.Bayross and S.Shah, The X Team, SPD.
5. Core Python Programming, Chun, Pearson Education.
6. Guide to Programming with Python, M.Dawson, Cengage Learning.
7. Perl by Example, E.Quigley, Pearson Education.
8. Programming Perl, Larry Wall, T.Christiansen and J.Orwant, O'Reilly, SPD.
9. Perl Power, J.P.Flynt, Cengage Learning.
10. PHP Programming solutions, V.Vaswani, TMH.

Outcomes:

- Ability to understand the differences between scripting languages.
- Ability to apply your knowledge of the weaknesses of scripting languages to select implementation.
- Master an understanding of python especially the object oriented concepts.

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(A1548) COMPILER DESIGN LAB

Objectives:

- To provide an understanding of the language translation peculiarities.

Recommended Systems/Software Requirements:

- Intel based desktop PC with minimum of 166 MHZ or faster processor with at least 64 MB RAM and 100 MB free disk space.
- C/C++ Compiler on Linux Operating System.

Week_1: Implementation of a lexical analyzer using lex

Write a program for implementing a Lexical analyser using LEX tool in Linux platform

Week_2: Implementation of symbol table

Write a program for implementing Symbol Table using C

Week_3: Finding First set and Follow set of productions

Write a C program for computing first set and Follow set of given productions

Week_4: construction of operator precedence parse table

Write a program for construction of Operator Precedence Parse Table using C

Week_5: Implementation of calculator using yacc

Write a program for implementing a calculator for computing the given expression using semantic rules of the YACC tool

Week_6: Implement a Recursive Descent parser

Write a program for implementing Recursive Descent Parsing using C

Week_7: Implementation of shift reduced parsing algorithms

Write a program for implementing Shift Reduce Parsing using C

Week_8: construction of LR parsing table Write a program for construction of LR Parsing table using C.

Week_9: Generation of code for a given intermediate code

Write a program for the generation of assembly language code of relational operator.

Week_10: implementation of code optimization techniques

Write a program for implementation of Code Optimization Technique for and do-while loop using C

References

1. Compiler Design in C by Allen Holub
2. A compact guide to Lex and Yacc Tutorial by Tom Niemann
3. Principles of Compiler Design Allman Jeffrey D. Aho Alfred V
4. Compiler Construction: Principles and Practice, Kenneth C. Louden
5. Advanced Compiler Design and Implementation, Steven Muchnick
6. The Compiler Design Handbook: Optimizations and Machine Code Generation, Second Edition, Y.N. Srikant and Priti Shankar

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(A1549) ADVANCED 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 Firefox
3. Tomcat web server and Apache web server ,
4. A database either Mysql or Oracle
5. JVM(Java virtual machine) must be installed on your system

Week-1:

Design the static web pages required for any online services 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, Cart Page etc.

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

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

2) LOGIN PAGE:

This page has to contain Login Form, Forgot Password, and Link to new user Registration Form, back to Home page etc. If the user is authenticated user, can access the web site. Otherwise he has to register.

3) REGISTRATION PAGE:

This page has to contain User Registration form minimum of 10 Fields (use all the form Widgets) If the user is authenticated user, can access the web site.

4) CATOLOGUE PAGE:

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

5) CART PAGE:

Selected list of items has to display in table format & compute cost before submitting. (Use Event Handler functions)

Week -2:

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

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

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

background-image:url(pics/img1.jpg);

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>

Work with layers:

For example:

LAYER 1ON TOP:

LAYER 1

<div style="position:relative; top:-50; left:5; color:red; font-size:80px;

z-index:1">LAYER 2

LAYER 2 ON TOP:

LAYER 1

<div style="position:relative; top:-50; left:5; color:red; font-size:80px;

z-index:4">LAYER 2

Add a customized cursor:

Selector {cursor:value}

For example:

<html>

<head>

<title>HTML CSS</title>

<style type="text/css">

p

{

```
color:purple;
font-size:14pt;
font-style:italic bold;
font-family:'Brush Script MT';
text-decoration:underline;
text-shadow:2px 8px red;
}
</style>
</head>
<body>
<p>This is a cursor:</p>
<a style="cursor:crosshair;fontsize:25px;">crosshair</a><br>
<a style="cursor:default;fontsize:25px;">default</a><br>
<a style="cursor:grab;font-size:25px;">grab</a><br>
<a style="cursor:zoom-in;fontsize:25px;">zoomin</a><br>
<a style="cursor:url;font-size:25px;">url</a><br>
<a style="cursor:pointer;fontsize:25px;">pointer</a><br>
</body>
</html>
```

Week-3:

VALIDATION:

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

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

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

E-mail id (should not contain any invalid and must follow the standard pattern name@domain.com)

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

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

Week-4:

Implement the following web application using PHP

A user validation web application where the user submits the login name and password to the server the name and password are checked against the data already available in the data base and if the data matches a successful login page is returned otherwise a failure message is shown to the user.

Week-5:

Write an XML file which will display the item (your wish) information which includes the following (for example)

Title of the book

Author Name

ISBN number

Publisher name

Edition

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:

Install TOMCAT web server and APACHE.

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

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:8080/cmrcet/books.html (for tomcat) http://localhost:8080/books.html (for Apache)

Week-7:

User Authentication:

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

Create a Cookie and add these four user id's and passwords to this Cookie.

Read the user id and passwords entered in the Login form 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. Store the user-names and passwords in the webinf.xml and access them in the servlet by using the getInitParameters() method.

Week-8:

Install a database(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).

Practice 'JDBC' connectivity.

Write a java program/servlet/JSP to connect to that database and extract data from the tables

and display them. Experiment with various SQL queries.

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

Week-9:

Write a JSP which does the following job:

Insert the details of the 3 or 4 users who register with the web site by using registration form. Authenticate the user when he submits the login form using the user name and password from the database.

Week-10:

Install a database(Mysql).

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 JDBC/ODBC code to connect to that database and extract data from the tables and display them. Experiment with various MySQL 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 .

Text Books:

1. Core Servlets and Java Server Pages VOLUME 1: CORE TECHNOLOGIES By Marty Hall and Larry Brown Pearson.
2. Java Server Pages-Hans Bergsten,SPD O'Reilly

Reference Books:

1. Web Programming, building internet applications, Chris Bates 2nd edition, Wiley Dreamtech
2. Java Script,D.Flanagan,O'Reilly,SPD
3. Beginning Web Programming-Jon Duckett WROX
4. Programming World Wide Web, R.W.Sebesta, Fourth Edition, Pearson.
5. Internet and world wide web-How to program ,Dietel and Nieto,Pearson

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(A1011) ANALYTICAL SKILLS-I

Quantitative Aptitude

- Number System
- LCM and HCF
- Averages
- Simple Equations
- Ratios & Proportions
- Partnerships
- Percentages
- Profit & Loss
- Time & Work
- Time & Distance
- Simple and compound interest
- Permutations & Combinations
- Probability

Reference Books :

1. QuantativeApptitude by R.S. Agarwal.

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(A1524) COMPUTER GRAPHICS

Objectives:

- To make students understand about fundamentals of Graphics and enable them to design animated scenes for virtual object creations.
- To make the student present the content graphically.

UNIT I:

Introduction: Application areas of Computer Graphics, overview of graphics systems, video-display devices, raster scan systems, random scan systems, graphics monitors and work stations and input devices.

Output primitives: Points and lines, line drawing algorithms, mid-point circle and ellipse algorithms. Filled area primitives: Scan line polygon fill algorithm, boundary-fill and flood-fill algorithms.

UNIT II:

2-D Geometrical transforms: Translation, scaling, rotation, reflection and shear transformations, matrix representations and homogeneous coordinates, composite transforms, transformations between coordinate systems.

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

UNIT III:

3-D Object representation: Polygon surfaces, quadric surfaces, spline representation, Hermite curve, Bezier curve and B-Spline curves, Bezier and B-Spline surfaces. Basic illumination models, polygon rendering methods.

3-D Geometrical transformations: Translation, scaling, rotation, reflection and shear transformations, composite transformations.

3-D Viewing: Viewing pipeline, viewing coordinates, view volume and general projection transforms and clipping.

UNIT IV:

Visible surface detection methods: Classification, back-face detection, depth-buffer, scan-line, depth sorting, BSP-tree methods, area sub-division and octree methods.

Illumination models and surface rendering methods: Basic illumination models, polygon rendering methods

UNIT V:

Computer animation: Design of animation sequence, general computer animation functions, computer animation languages, raster animation, key frame systems, motion specifications.

TEXT BOOKS:

1. "Computer Graphics C version", Donald Hearn and M.Pauline Baker, Pearson Education.

2. "Computer Graphics Principles & practice", second edition in C, Foley, VanDam, Feiner and Hughes, Pearson Education.

3. "Computer Graphics Second edition", Zhigand xiang, Roy Plastock, Schaum's outlines, Tata Mc- Graw hill edition.

REFERENCE BOOKS:

1. "Computer Graphics Principles & practice", second edition in C, Foley, VanDam, Feiner and Hughes, Pearson Education.
2. Procedural elements for Computer Graphics, David F Rogers, Tata Mc Graw hill, 2nd edition.
3. "Principles of Interactive Computer Graphics", Neuman and Sproul, TMH.
4. Principles of Computer Graphics, Shalini Govil, Pai, 2005, Springer.
5. Computer Graphics, Steven Harrington, TMH
6. Computer Graphics, F.S.Hill, S.M.Kelley, PHI.
7. Computer Graphics, P.Shirley, Steve Marscner & others, Cengage Learning.
8. Computer Graphics & Animation , M.C. trivedi, Jaico Publishing House.
9. An Integrated Introduction to Computer Graphics and Geometric Modeling, R.Goldman, CRC Press, Taylor & Francis Group.
10. Computer Graphics, rajesh K.maurya, wiley India.

Outcomes:

- Students can animate scenes entertainment
- Students will be able to work in computer aided design for content presentation
- better analogy data with pictorial representation

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B.Tech VI - Sem

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(A1519) DATA WAREHOUSING AND DATA MINING

Objectives:

- Study data warehouse principles and its working learn data mining concepts understand association rules mining. Discuss classification algorithms learn how data is grouped using clustering techniques

Unit I:

Data Warehousing: Introduction to Data warehouse, differences between operational Database Systems and warehouses, Data Warehouse Architecture and its components , Data Warehouse Characteristics, ETL, Multi Dimensional data model, Schema Design-Star-Snowflake-Galaxy Schema, Fact Table, Fully-Adictive, Semi-Adictive, Non-Adictive measures, Fact-Less-Facts, Dimension Table characteristics, OLAP Cube and Operations, OLAP Server Architecture-ROLAP,MOLAP,HOLAP.

Unit II:

Introduction to Data Mining: Introduction, What is data mining, Definition, KDD, Challenges, Data Mining Tasks, Data Preprocessing-Cleaning, Missing Data, Dimensionality Reduction, Feature Subset Selection, Data transformation, Dicretization and Binaryzation, Measures of Similarity and Dissimilarity-Basics.

Unit III:

Association Rule Mining: Problem Definition, Frequent Item Set Generation, The APRIORI principle, Support and Confidence measure, Association Rules Generation: Apriori Algorithm, The Partition Algorithms, FP-Growth Algorithms, Compact Representation of Freqent Item Set-Maximal and Closed Frequent Itemset.

Unit IV:

Classification : Problem definition, General approaches to solve Classification problems, Evaluation of a Classifier , Classification techniques, Decision Tree Decision tree construction, Methods for Expressing attribute test condition, Measures for selecting the Best Split, Algorithm for Decision tree Induction, Naive Bayes Classifiers , Bayesian Belief Networks , K Nearest neighbor classification algorithm & characteristics.

Unit V:

Cluster Analysis: Types of Data in Cluster Analysis, A Categorization of Major Clustering Methods, Partitioning Methods, K-Means Clustering, K-Means additional Issues, PAM Algorithm, Hierarchical Clustering- Agglomerative methods and divisive methods, Basic Agglomerative Hierarchical clustering algorithms, Specific techniques, Key issues in Hierarchical Clustering, Strengths and Weekness, Outlier Detection.

Textbooks:

1. Data Mining – Concepts and Techniques - JIAWEI HAN & MICHELINE KAMBER Harcourt India.
2. Introduction to Data Mining –Pang-Ning Tan,Michael Steinbach and Vipin Kumar,Pearson Education

References:

1. Data Mining Techniques – Arun K Pujari, University Press.
2. Data Warehousing in the Real World – Sam Anahory & Dennis Murray. Pearson Edn Asia.
3. Data Warehousing Fundamentals – Paulraj Ponnaiah Wiley Student Edition.

Outcomes:

- Student should be able to understand why the data warehouse in addition to database systems.
- Ability to perform the preprocessing of data and apply mining techniques on it.
- Ability to identify the association rules, classification and clusters in large data sets.
- Ability to solve real world problems in business and scientific information using data mining.

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B.Tech VI - Sem

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(A1516) INFORMATION SECURITY

OBJECTIVES

- Explain the objectives of information security
- Explain the importance and application of each of confidentiality, integrity, authentication and availability
- To understand various cryptographic algorithms
- To understand the basic categories of threats to computers and networks
- Describe public key cryptosystem
- Describe the enhancement made to IPV4 by IPSec
- Understand intrusions and intrusion detection
- Discuss the fundamental ideas of public key cryptography
- Generate and distribute a PGP key pair and use the PGP package to send an encrypted email message.
- Discuss web security and firewalls

Unit I:

Attacks on Computers and Computer Security: Introduction to Information Security, the need for security, Security approaches, Principles of Security, Types of Security attacks, Security Services, Security Mechanisms, A model for Network Security.

Cryptographic Techniques: Introduction, plain text and cipher text, substitution Techniques, transposition techniques, encryption and decryption, symmetric and asymmetric key cryptography, steganography, Key range and key size, possible types of attaks.

Unit II:

Symmetric Key Ciphers: Block cipher principles, DES, AES, Blowfish, Differential and linear cryptanalysis, Block cipher modes of operations, stream ciphers, RC4, location and placement of encryption function, key distribution

Asymmetric key Ciphers: Principles of public key cryptosystems, key distribution, RSA, Diffie-Hellman key exchange, ECC algorithms.

Unit III:

Message Authentication Algorithms and Hash Functions: Authentication Requirements, Functions, Message Authentication Codes, Hash Functions, Secure Hash Functions, HMAC, CMAC, Digital Signatures, Knapsack algorithm.

Authentication Applications: Kerberos, X.509 authentication Services, Public key Infrastructure,

Biometric Authentication.

Unit IV:

E-Mail-Security: Pretty Good Privacy, S/MIME

IP Security: IP Security Overview, IP Security Architecture, Authentication Header, Encapsulating Security payload, Combining Security associations, Key management.

Unit V:

Web Security: Web Security Considerations, Secure Socket Layer and Transport layer Security, Secure Electronic transaction,

Intruders, Virus & Firewall: Intruders, intrusion detection, Virus and virus related threats, Counter measures, Firewall design principles, Types of firewalls password management.

Case studies on Cryptography and Security: Secure Inter-branch payment transcation, Cross site scripting Vulnerability, Virtual Elections

Textbooks:

1. Cryptography and Network Security : William Stallings, Pearson Education, 4th Edition
2. Cryptography and Network Security : Atul Kahate, Mc Graw Hill, 2nd Edition

References:

1. Cryptography and Network Security: C.K.Shyamala, N. Harani, Dr.T.R. Padmanabhan, Wiley India, 1st Edition.
2. Cryptography and Network Security: Forouzan Mukhopadhyay, Mc Graw Hill, 2nd Edition
3. Information Security, Principles and Practice: mark stamp, Wiley India.
4. Principles of Computer Security: WM.Arthur Conklin, Greg White, TMH
5. Introduction to Network Security: Neal Krawetz, CENGAGE Learning
6. Network Security and Cryptography: Bernard Menezes CENGAGE Learning

OUTCOMES

- Student will be able to understand basic cryptographic algorithms, message and web authentication and security issues
- Ability to identify information system requirements for both of them such as client and server
- Ability to understand the current legal issues towards information security

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(A1520) .Net and C# Programming

OBJECTIVE:

Understand the concept of .NET framework, study the different techniques of security, introduce web services with ASP.NET, and explore window based applications

Unit I: C# LANGUAGE BASICS

C# and the .NET framework - C# basics - Objects and types - Inheritance - Arrays - Operators and casts – Indexes

Unit II: C# LANGUAGE BASICS

Delegates and events - Strings and regular expressions - Generics - Collections - Memory management and pointers - Errors and exceptions.

Unit III: BASE CLASS LIBRARIES AND DATA MANIPULATION

Tracing and events - Threading and synchronization - .Net security - Localization - Manipulating XML - Managing the file system - Basic network programming

Unit IV: DATABASE AND WEB SERVICES

Window based applications - Data access with .NET - basics of ASP .NET - Introduction to web services.

Unit V: NET FRAMEWORK

Architecture - Assemblies - Shared assemblies - CLR hosting – App domains – Reflection

TOTAL: 45 PERIODS

Textbooks:

1. Christian Nagel et al. “Professional C# 2005 with .NET 3.0”, Wiley India, 2007

References:

1. Ian Gariffiths, Mathew Adams, Jesse Liberty, “Programming C# 4.0”, O’Reilly,Fourth Edition, 2010.
2. Andrew Troelson, “Pro C# with .NET 3.0”, Apress, 2007.
3. Kevin Hoffman, “Microsoft Visual C# 2005”, Pearson Education, 2006.
4. S.Thamarai Selvi, R. Murugesan, “A Text Book on C#”, Pearson

OUTCOMES:

- Student will be able to develop windows based applications
- Ability to use .net framework to build Client/Server Applications

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(A1521) ADVANCED COMPUTER ARCHITECTURE

Objectives

- To acquire knowledge on advanced principles and current practices in computer architecture.
- To apply various methods for exploiting parallelism in memory hierarchies and input/ output systems.
- To explore various hardware and software techniques designed to maximize parallelism and improve performance.
- To acquire knowledge about the design of pipelined processor and hierarchical memory.
- To explore current research trends and future directions in multiprocessors.

UNIT - I

Theory of Parallelism, Parallel Computer models, The State of Computing, Multiprocessors and Multicomputer. Multi-vector and SIMD Computers, PRAM and VLSI models, Architectural & Development tracks Program and network properties, Conditions of Parallelism, Program partitioning and Scheduling, Program flow Mechanisms, System interconnect Architectures.

Principles of Scalable performance, Performance metrics and measures, Parallel Processing applications, Speed up performance laws. Scalability Analysis and Approaches, Hardware Technologies.

UNIT - II

Processes and memory Hierarchy, Advanced Processor Technology, Superscalar and Vector Processors, Memory Hierarchy Technology, Virtual Memory Technology.

Bus Cache and Shared memory, Backplane bus systems, Cache Memory organizations, Shared-Memory Organizations, Sequential and weak consistency models, Pipelining and superscalar techniques, Linear Pipeline Processors, Non-Linear Pipeline Processors, Instruction Pipeline design, Arithmetic pipeline design, superscalar pipeline design.

UNIT - III

Parallel and Scalable Architectures, Multiprocessors and Multi computers, Multiprocessor system interconnects, cache coherence and synchronization mechanism, Three Generations of Multicomputer, Message-Passing Mechanisms, Multi-vector and SIMD computers, Vector Processing Principles, Multi-vector Multiprocessors.

Scalable, Multithreaded and Dataflow Architectures, Latency-hiding techniques, Principles of Multithreading, Fine-Grain Multicomputer, Scalable and multithreaded Architectures, Dataflow and Hybrid Architectures.

UNIT - IV

Software for parallel programming, Parallel models, Languages and Compilers, Parallel Programming models, Parallel languages and compilers, Dependence analysis and data arrays, Loop Parallelization and pipelining.

Parallel Program development and Environments, Parallel Programming Environments, Synchronization and Multiprocessing modes, Shared, Variable program structures, Message-passing program development, Mapping program onto multi-computers.

UNIT - V

Instruction level parallelism, Introduction, Basic Design issues, Problem Definition, Model of typical processor, Compiler-Detector Instruction level parallelism, Operand forwarding, Recorder Buffer, Register Re-naming, Tomasulo's Algorithm, Branch Prediction, Limitations in exploiting instruction level parallelism, Thread level parallelism, Recent Advances in computer Architecture.

TEXT BOOK:

1. Advanced Computer Architecture Second Edition, Kai Hwang, Tata McGrawHill Publishers.

REFERENCE BOOKS:

1. Computer Architecture, Fourth edition, HJ.L. Hennessy and D.A. Patterson. ELSEVIER.
2. Advanced Computer Architectures, S.G. Shiva, Special Indian edition CRC Taylor & Francis.
3. Introduction to High Performance Computing for Scientists and Engineers, G.Hager and G Wellein, CRC Press, Taylor & Francis Group
4. Advanced Computer Architecture, D.Sima, T. Fountain, P.Kacsuk, Pearson Education.
5. Computer Architecture, B.Parhami, Oxford Univ. Press

Outcomes

- Students will be able to identify, formulate, and solve computer hardware principles and performance
- To use the techniques and skills to provide hardware and software solutions including parallelism and interconnections.

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(A1522) ARTIFICIAL INTELLEGENCE

Objectives:

- To learn the differences between optimal reasoning verses human reasoning.
- To understand the notations of state space representation, exhaustive search, heuristic search along with the time and space complexities.
- To learn different knowledge representation techniques.
- To understand the various applications of AI.

UNIT- I

Introduction, History, Intelligent Systems, Foundations of AI, Subareas of AI, Applications. Problem Solving-State-Space Search and Control Strategies: Introduction, General Problem Solving, Characteristics of Problem, Exhaustive Searches, Heuristic Search Techniques, Iterative Deepening A*, Constraint Satisfaction, Game Playing, Bounded Look-ahead Strategy and use of Evaluation Functions, Alpha-Beta Pruning.

UNIT-II

Logic Concepts and Logic Programming: Introduction, Propositional Calculus, Propositional Logic, Natural Deduction System, Axiomatic System, Semantic Tableau System in Propositional Logic, Predicate Logic, Logic Programming.

Knowledge Representation: Introduction, Approaches to Knowledge Representation using Semantic Network, Extended Semantic Networks for KR, Knowledge Representation Using Frames.

UNIT-III

Expert System and Applications: Introduction, Phases in Building Expert Systems, Expert System Architecture, Expert Systems Vs Traditional Systems, Truth Maintenance Systems, Application of Expert Systems, List of Shells and Tools.

Uncertainty Measure- Probability Theory: Introduction, Probability Theory, Bayesian Belief Networks, Certainty Factor Theory, Dempster-Shafer Theory.

UNIT-IV

Machine-Learning Paradigms: Introduction, Machine Learning Systems, Supervised and Unsupervised Learning, Learning Decision Trees, Deductive Learning, Clustering, Support Vector Machines.

Artificial Neural Networks: Introduction, Artificial Neural Networks, Single-Layer Feed-Forward Networks, Multi-Layer Feed-Forward Networks, Radial Basis Function Networks, Design Issues of Artificial Neural Networks, Recurrent Networks.

UNIT-V

Advanced Knowledge Representation Techniques: Case Grammars, Semantic Web.

Natural Language Processing: Sentence Analysis Phases, Grammars and Parsers, Types of Parsers, Semantic Analysis, Universal Networking Knowledge.

TEXT BOOKS:

1. Russel, Norvig: Artificial Intelligence. A Modern Approach, Pearson Education, Second Edition, 2004.
2. Saroj Kaushik: Artificial Intelligence, Cengage Learning, 2011.

REFERENCE BOOKS:

1. Patric Henry Winston: Artificial Intelligence - Third Edition, Person Education.
2. Rich, Knight, Nair: Artificial Intelligence, TMH, Third Edition 2009.

Outcomes:

- Possess the ability to formulate an efficient problem space for a problem expressed in English.
- Possess the ability to select a search algorithm for a problem and characterize its time and space complexities.
- Possess the skill for representing knowledge using appropriate AI technique.
- Possess the ability to apply AI techniques for solving problems.

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(A1523) LINUX PROGRAMMING

Objectives:

- To understand and make effective use of Linux utilities and Shell scripting language (bash) to solve Problems.
- To implement in C some standard Linux utilities such as ls, mv, cp, etc. using system calls.
- To develop the skills necessary for systems programming including file system programming, process and signal management, and interprocess communication.
- To develop the basic skills required to write network programs using Sockets.

Unit I:

Linux Utilities: File handling utilities, Security by file permissions, Process utilities, Disk utilities, Networking commands, Filters, Text processing utilities and Backup utilities.

Sed – scripts, operation, addresses, commands, applications, awk – execution, fields and records, scripts, operation, patterns, actions, functions, system commands in awk.

Application shell with the Bourne Again Shell(Bash): Introduction, shell responsibilities, pipes and Redirection, here documents, running a shell script, the shell as a programming language, shell meta characters, file name substitution, shell variables, command substitution, shell commands, the environment, quoting, test command, control structures, arithmetic in shell, shell script examples, interrupt processing, functions, debugging shell scripts.

Unit II:

Linux Files: File Concept, File System Structure, File metadata-Inodes, File types, Kernel support for files, system calls for file I/O operations- open, creat, read, write, close, lseek,dup2, file status information- stat family, file and record locking-fcntl function, file permission-chmod, fchmod,file ownership-chown, lchown,fchown, links- soft links & hard links - unlink, link, symlink.

Directories: creating, removing and change Directories (mkdir, rmdir, chdir), obtaining current working directory(getcwd), Directory contents, Scanning Directories (opendir, readdir, closedir,rewinddir, seekdir, telldir functions).

Unit III:

Linux Process: Process concept, Layout of C program image in main memory, Process environment- environment list, environment variables, getenv, setenv, Kernel support for process, process identification, process control - process creation, replacing a process image, waiting for a process, process termination, zombie process, orphan process, system call interface for process management-fork, vfork, exit, wait, waitpid, exec family, Process groups, Session and Controlling Terminals, Difference between threads and processes.

Linux Signals: Introduction to signals, Signal generation and handling, Kernel support for

signals, Signal function, unreliable signals, reliable signals, kill, raise , alarm, pause, abort, sleep functions.

Unit IV:

Interprocess Communication: Introduction to IPC, IPC between processes on a single computer system, IPC between processes on different systems, pipes- creation, IPC between related processes using unnamed pipes, FIFOs- creation, IPC between related processes using FIFOs, difference between unnamed and named pipes, popen, pclose functions.

Message Queues: Kernel support for messages, Linux APIs for messages, client/server example.

Semaphores: Kernel support for semaphores, Linux APIs for semaphores, file locking with semaphores.

Unit V:

Shared Memory: Kernel support for shared memory, Linux APIs for shared memory, shared memory example.

Sockets: Introduction to Berkeley sockets, IPC over a network, Client-server model, socket address structure(Unix domain and inter domain), Socket system calls for connection oriented protocol and connectionless protocol, example-client/server programs-Single server-client connection, Multiple simultaneous clients, Socket options-setsockopt and fcntl system calls, comparision of IPC mechanisms.

Textbooks:

1. Unix System Programming using C++, T.Chan, PHI.
2. Unix Concepts and Applications, 4th Edition, Sumitabha Das, TMH,2006.
3. Unix Network Programming ,W.R.Stevens,PHI.

References:

1. Linux System Programming, Robert Love, O'Reilly, SPD, rp-2007.
2. Beginning Linux Programming, 4th Edition, N.Matthew, R.Stones,Wrox, Wiley India Edition,rp-2008.
3. Unix for programmers and users, 3rd Edition, Graham Glass, King Ables, Pearson Education, 2003.
4. Advanced Programming in the Unix environment, 2nd Edition, W.R.Stevens, Pearson Education.
5. System Programming with C and Unix,A.Hoover,Pearson.
6. Unix Programming, Kumar Saurabh, 1st Edition, Wiley India pvt Ltd.
7. Unix and Shell programming, B.A.Forouzan and R.F.Gilberg, Cengage Learning.

Outcomes:

- Work confidently in Linux environment.
- Work with shell script to automate different tasks as Linux administration.

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(A1021) MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS

Objectives:

- The students should be able to apply the principles of economics in business decision making process, Demand analysis, Elasticity of Demand and Demand forecasting.
- Study cost concepts and Break Even Analysis.
- Describe "Business" and new economic environment and also the capital and its significance and capital budgeting techniques.
- Describe the accounting concepts and conventions and financial statements to be prepared for any business.
- Describe the accounting concepts and financial analysis through ratios.

Unit I Introduction & Demand Analysis:

Definition, Nature and Scope of Managerial Economics Demand Analysis: Demand Determinants, Law of Demand and its exceptions. Elasticityof Demand: Definition, Types, Measurement and Significance ofElasticityof Demand. Demand Forecasting, Factors governing demand forecasting, methods of demand forecasting (survey methods, statistical methods, expert opinion method, test marketing, controlled experiments, judgmental approach to demand forecasting)

Unit II Theory of Production and Cost Analysis:

Production Function Isoquants and Is costs, MRTS, Least Cost Combination of Inputs,Cobb-Douglas Production function, Laws of Returns, Internal and External Economies of Scale.

Cost Analysis: Cost concepts, Opportunity cost, fixed vs. Variable costs, explicit costs Vs. Implicit costs, Out of pocket costs vs. Imputed costs. Break-even Analysis (BEA)-Determination of Break-Even Point (simple problems)- Managerial Significance and limitations of BEA.

Unit III Introduction to Markets & New Economic Environment:

Market structures: Types of competition and Markets, Features of Perfect competition, Monopoly and Monopolistic Competition. Price-Output Determination in case of Perfect Competition and Monopoly. Pricing: Objectives and Policies of Pricing- Methods of Pricing, Business: Features and evaluation of different forms of Business Organisation: Sole Proprietorship, Partnership, Joint Stock Company, Public Enterprises and their types, New Economic Environment in Post-liberalization scenario.

Unit IV Capital and Capital Budgeting:

Capital Budgeting: Capital and its significance, Types of Capital, Estimation of Fixed and Working capital requirements, Methods and sources of raising finance. Capital Budgeting:

Nature and scope of capital budgeting, features of capital budgeting proposals, Methods of Capital Budgeting: Payback Method, Accounting Rate of Return (ARR) and Net PresentValue Method (simple problems)

Unit V Introduction to Financial Accounting& Financial Analysis:

Accounting concepts and conventions-Introduction IFRS-Double-Entry Book Keeping, Journal, Ledger, Trial Balance- Final Accounts (Trading Account, Profit and Loss Account and Balance Sheet with simple adjustments). Financial Analysis: Analysis and Interpretation of Liquidity Ratios, Activity Ratios, and Capital structure Ratios and Profitability ratios.Conversion of Ratios into preparation of Financial Statements.

TEXT BOOKS:

1) S.ASiddiqui&A.SSiddiqui Managerial Economics& Financial Analysis, New Age International Publishers, Hyderabad 2013 .

2) Varshney&Maheswari: Managerial Economics, Sultan Chand, 2009.

REFERENCES:

1. Ambrish Gupta, Financial Accounting for Management, Pearson Education, New Delhi.

2. H. Craig Peterson & W. CrisLewis, Managerial Economics, Person, 2012.

3. Lipsey&Chrystel, Economies, Oxford University Press,2012.

4. Dwivedi: Managerial Economics,Vikas2012.

5. Shailaja&Usha: MEFA, University Press,2012.

6. Aryasri: Managerial Economics & Financial Analysis, TMH,2012.

Outcomes:

- To understand the results of the managerial decisions taken in business organization and study the different types of elasticity of demand.
- Understand and apply Production Function formula in determining increasing, constant and decreasing returns, the price, output determination under perfect competition, monopoly.
- To know the requirements for starting a business and understand the effect of the principles of LPG in the new economic environment, the importance of capital in starting a business unit.
- Understand the accounting concepts and conventions followed in double entry book keeping system and know the preparation of final accounts.
- Understand the application of different financial ratios to study the liquidity, solvency and profitability of a business concern.

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(A1550) LINUX PROGRAMMING and DATA MINING LAB

Objective:

- This course is intended for students who are new to the Perl programming language. Because Perl is such a versatile language, and is used for many different tasks, this course will appeal to a wide variety of professionals: System administrators, Web developers, and application programmers will all benefit from attending.
- Students will put their programming skills to use in constructing a complete end-to-end information system solution. This will often be their first opportunity to construct a non-trivial system of software.
- To write TCL scripts to solve problems.
- Demystify programming, enjoy python scripting
- Discover python lexical features and syntax
- Learn core python structures and flow control
- Discover python web programming
- Manage SQL and NoSQL databases with python

Part A : DATA MIINIG TOOLS

Unit I: Build Data Warehouse and Explore WEKA

a. Build Data Warehouse /data mart using open source tools like Pentaho Data Integration Tool. Pentaho business Analytics or other tools like Microsoft-SSIS, Informatics, Business objects etc.

   1. Identify source tables and populate sample data.
   2. Design schemas like star, snowflake and galaxy on any enterprises like banking, Insurance, Finance, Manufacturing, Automobile, etc.
   3. Write ETL scripts and implement using data warehouse tools.
   4. Perform OLAP operations.
   5. Explore visualization features of the tool.

b. Explore WEKA Data Mining/Machine Learning Tool Kit

   1. Downloading and Installing WEKA Toolkit.
   2. Understanding the applications of WEKA.
   3. Navigate through different panels.
   4. Understand the .arff file format.
   5. Explore the available data sets in WEKA'
   6. Load the Data set
   7. Please observe the following.

      a. Attribute names and types.

b. No of records in each dataset.
c. Identify the class attribute.
d. Plot Histogram
e. Determine the no of records for each class.
f. visualize the data in various dimensions.

Unit II: Perform Data preprocessing tasks and demonstrate performing association rule mining on data sets.

1. Explore various options available in WEKA for data preprocessing and apply filters on each data set.
2. Load each data set into WEKA and run Apriori algorithm with different support and confidence values.
3. Apply different dicretization filters on numerical attributes and run the Apriori association rule algorithm. Study the rules generated.

Unit III: Demonstrate performing classification on datasets.

1. Load each datasets into WEKA and run ID3,J48 Classification algorithm and study the classifier output. Compute entropy values ,kappa statistics..Extract If-then rules from the decision tree generated by the classifier, observe the confusion matrix and derive the accuracy.
2. Load each data set into WEKA and perform Naïve-Bayes classification and k-Nearest neighbor classification.
3. Plot ROC curves.
4. Compare classification results of ID3,J48,Naïve Bayes and k-NN classifiers for each ata set and deduce the best classifier.

Unit IV: Demonstrate performing clustering on data sets.

1. Load each data set into WEKA and run simple k-means clustering algorithm with different values of K ,study the clusters formed .Observe the sum of squared errors and centroids and derive insights.
2. Explore other clustering techniques available in WEKA.
3. Explore visualization features of WEKA to visualize the clusters. Derive interesting insights and explain.

Unit V: Demonstrate performing Repression on data sets.

1. Load each data set into WEKA and build Linear Regression Model ,Study the clusters formed. Use Training set option, Interpret the regression model and derive patterns and conclusions from the regression results.
2. Use options cross-validations and percentage split and repeat running the Linear Regression Model .Observe the results and derive the results.
3. Explore simple Linear regression techniques that only looks at one variable.

Resource Sites:

1. http://www.pentaho.com/

2. http://www.cs.waikato.ac.nz/ml/weka.

REFERENCE BOOKS:

1. Open Source Web Development with LAMP using Linux, Apache, MySQL, Perl and PHP, J.Lee and B.Ware(Addison Wesley) Pearson Education.
2. Programming Python,M.Lutz,SPD.
3. PHP 6 Fast and Easy Web Development, Julie Meloni and Matt Telles, Cengage Learning Publications.
4. PHP 5.1, I.Bayross and S.Shah, The X Team, SPD.
5. Core Python Programming, Chun, Pearson Education.
6. Guide to Programming with Python, M.Dawson, Cengage Learning.
7. Perl by Example, E.Quigley, Pearson Education.
8. Programming Perl, Larry Wall, T.Christiansen and J.Orwant, O'Reilly, SPD.
9. Tcl and the Tk Tool kit, Ousterhout, Pearson Education.
10. PHP and MySQL by Example, E.Quigley, Prentice Hall (Pearson).
11. Perl Power, J.P.Flynt, Cengage Learning.
12. PHP Programming solutions, V.Vaswani, TMH.

PARTB:

LINUX PROGRAMMING

List of Programs

1. Write a shell script that accepts a file name, starting and ending line numbers as arguments and display all the lines between the given line numbers.
2. Write a shell script that deletes all lines containing the specified word in one or more files supplied as arguments to it.
3. Write a shell script that displays a list of all files in the current directory to which the user has read, write and execute permissions.
4. Write a shell script that receives any number of file names as arguments checks if every argument supplied is a file or directory and reports accordingly. Whenever the argument is a file, the number of lines on it is also reported.
5. Write a shell script that accepts a list of file names as its arguments, counts and reports the occurrence of each word that is present in the first argument file on other argument files.
6. Write a shell script to list all of the directory files in a directory.
7. Write a shell script to find factorial of a given number.
8. Write an awk script to find the number of lines in a file that do not contain vowels.
9. Write an awk script to find the number of characters, words and lines in a file.
10. Write a C program that makes a copy of a file using standard I/O and system calls.
11. Implement in C the following Linux commands and System calls.
    A. cat B. mv
12. Write a C program to create a child process and allow the parent to display "parent" and the

child to display "child" on the screen.

13. Write a C program to create a zombie process.
14. Write a C program that illustrates how an orphan is created.
15. Write a C program in which a parent writes a message to a pipe and the child reads the message.
16. Write a C Program that illustrate suspending and resuming processes using signals..
17. Write client and server programs (using C) for connection oriented communication between server & client processes using unix Domain sockets to perform the following Client process sends a message to the server process. The server receives the message reverses it and sends it back to the client. The client will then display the message to the standard output device.

Textbooks:

1. Beginning Linux programming 4th Edition, N Mathew, TR Stone, Wrox, Wiley India Edition.
2. Advanced Unix Programming, N. B. Venkateswarulu, BS Publications.
3. Unix and Shell Programming, B. A. Forouzan and R. F. Gilberg, Cenegage Learning.
4. Unix and Shell Programming, M. G. Venkatesh Murthy, Pearson Education, 2005.
5. Unix Shells by Example, 4th Edition, Elllie Quigley, Pearson Education.
6. Sed and Awk, O. Dougherty & A. Robbins, 2nd Edition, SPD.

Outcomes:

- Ability to understand the Linux environment.
- Ability to perform the file management and multiple tasks using shell scripts in Linux environment.

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(A1004) ADVANCED ENGLISH COMMUNICATION SKILLS LAB

Introduction

The introduction of the English Language Lab is considered essential at 3rd year level. At this stage the students need to prepare themselves for their careers which may require them to listen to, read, speak and write in English both for their professional and interpersonal communication in the globalised context.

Objectives:

This Lab focuses on using computer-aided multimedia instruction for language development to meet the following targets:

- To improve the students' fluency in English, through a well-developed vocabulary and enable them to listen to English spoken at normal conversational speed by educated English speakers and respond appropriately in different socio-cultural and professional contexts.
- Further, they would be required to communicate their ideas relevantly and coherently in writing.

LEARNING OUTCOMES

- Gather ideas and information, to organise ideas relevantly and coherently.
- Engage in debates.
- Participate in group discussions.
- Face interviews.
- Write project/research reports/technical reports.
- Make oral presentations.
- Write formal letters.
- Transfer information from non-verbal to verbal texts and vice versa.
- To take part in social and professional communication.

Syllabus:

The following course content is prescribed for the Advanced Communication Skills Lab:

1. Functional English –

- Starting a conversation
- responding appropriately and relevantly
- using the right body language
- roleplay in different situations.

2. Vocabulary building

- synonyms and antonyms,
- word roots,

- one-word substitutes,
- prefixes and suffixes,
- study of word origin,
- analogy,
- idioms and phrases verbs

3. Group Discussion –

- dynamics of group discussion,
- intervention,
- summarizing,
- modulation of voice,
- body language,
- relevance, f
- fluency and coherence.

4. Interview Skills –

- concept and process,
- pre-interview planning,
- opening strategies,
- answering strategies,
- Interview through tele and video-conferencing.

5. Resume and Technical Report writing –

- structure and presentation,
- planning,
- defining the career objective,
- projecting ones strengths and skill-sets,
- summary, formats and styles,
- Letter-writing.
- Reading comprehension – reading for facts, guessing meanings from context, scanning, skimming, inferring meaning and critical reading.

Minimum Requirement:

The English Language Lab shall have:

- The Computer aided Language Lab for 60 students with 60 systems,
- One master console, LAN facility and English language software for self- study by learners.
- The Communication Skills Lab with movable chairs and audio-visual aids with a P.A System, a T. V., a digital stereo –audio & video system and camcorder etc.
- System Requirement (Hardware component):
- Computer network with Lan with minimum 60 multimedia systems with the following specifications:

P – IV Processor

d) Speed – 2.8 GHZ

e) RAM – 512 MB Minimum

f) Hard Disk – 80 GB

Headphones of High quality

Suggested Software:

The software consisting of the prescribed topics elaborated above should be procured and used.

Suggested Software:

- Clarity Pronunciation Power – part II
- Oxford Advanced Learner's Compass, 7th Edition
- DELTA's key to the Next Generation TOEFL Test: Advanced Skill Practice.
- Lingua TOEFL CBT Insider, by Dreamtech
- TOEFL& GRE(KAPLAN, AARCO&BARRONS, USA, Cracking GRE by CLIFFS)
- The following software from 'train2success.com'
  - Preparing for being Interviewed,
  - Positive Thinking,
  - Interviewing Skills,
  - Telephone Skills,
  - Time Management
  - Team Building,
  - Decision making

DISTRIBUTION AND WEIGHTAGE OF MARKS English Language Laboratory Practical **Examination:**

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

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(A1012) ANALYTICAL SKILLS-II

Logical Reasoning

- Analogy
- Classification
- Series & Sequence
- Coding & Decoding
- Directions
- Blood Relations
- Seating Arrangements
- Clocks and Calendars

Analytical Ability & Reasoning

- Cubes
- Logical Deductions
- Figure Analysis
- General Puzzles
- Data Sufficiency
- Data Interpretation

Business English

- Basics of Communication Skills
- Articles
- Tenses
- S+ V agreement
- Model Verbs
- Be/do/has/have Forms
- Question Forms

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(A1517) MOBILE COMPUTING

Objectives:

- To make the student understand the concept of mobile computing paradigm, its novel applications and limitations.
- To understand the typical mobile networking infrastructure through a popular GSM protocol.
- To understand the issues and solutions of various layers on mobile networks, namely MAC layer, Network Layer & Transport Layer.
- To understand the database issues in mobile environments & data delivery models.
- To understand the platforms and protocols used in mobile environment.
- To understand the importance of information security in mobile communication.

Unit I:

Introduction: Mobile Communications, Mobile computing- paradigm, promises/Novel Applications and Impediments and Architecture; Mobile and handheld Devices, limitations of mobile and handheld devices.

GSM – Services, system architecture, Radio Interface, Protocols, Localization , Calling, Handover, Security, New Data services, GPRS, CSHSD, DECT

Unit II:

(Wireless) Medium Access Control (MAC): Motivation for a specialized MAC (Hidden and Exposed terminals, near and Far terminals), SDMA, FDMA, TDMA, CDMA, wireless LAN/ (IEEE 802.11)

Mobile Network Layer: IP and Mobile IP network layers, Packet Delivery and Handover Management, location management, registration, tunneling, and encapsulation, route optimization, DHCP.

Unit III:

Mobile Transport Layer: Conventional TCP/IP, protocols, Indirect TCP, Snooping TCP, Mobile TCP, other transport layer protocols for mobile networks.

Database Issues: Database hoarding, and Caching techniques, Client- Server computing and adaptation, transactional modals, Query processing, data recovery process and QoS issues.

Unit IV:

Data Dissemination and Synchronization: Communications Asymmetry, Classification of data delivery Mechanisms, Data Dissemination, Broadcast Models, Selective Tunneling and Indexing Methods, Data Synchronization- Introduction, software, and Protocols.

Unit V:

Mobile Ad-hoc Networks (MANETs): Introduction, Applications and Challenges of a MANET, 4G networks: Requirements and design, modulation and Multiplexing Techniques for 4G networks, Security in Ad-hoc networks.

Protocols and Platforms for Mobile Computing: WAP, Bluetooth, XML, J2ME, JavaCard, PalmOS, Windows CE, Symbian OS, Linux for Mobile Devices, Android.

Textbooks:

1. Jochen Schiller, "Mobile Communications", Addison – Wesley, Second Edition, 2009.
2. Raj Kamal, " Mobile Computing", Oxford University Press, 2007, ISBN: 0195686772

References:

1. Jochen Schiller, "Mobile Communications", Addison – Wesley, Second Edition, 2004.
2. Stojmenovic and Cacute, "Handbook of Wireless Networks and Mobile Computing", Wiley, 2002, ISBN 0471419028.
3. Reza Behravanfar, "Mobile Computing Principles: Design and Developing Mobile Applications with UML and XML", ISBN: 0521817331, Cambridge University Press, Oct 2004.

Outcomes:

- Able to think and develop new mobile application
- Able to take any new technical issue related to this new paradigm and come up with a solution(s)
- Able to develop new Ad-hoc network applications and /or algorithms/protocols
- Able to understand & develop any existing or new protocol related mobile environment
- Able to understand the different types of mobile operating system

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(A1531) INFORMATION RETRIEVAL SYSTEMS

Objectives:

- To learn the different models for information storage and retrieval.
- To learn about the various retrieval utilities.
- To understand indexing and querying in information retrieval systems
- To expose the students to the notions of structured and semi structured data
- To learn about web search.

Unit I:

Retrieval Strategies: Vector space model, Probabilistic Retrieval Strategies: Simple term weights, Non- Binary Independence Model, Language models

Unit II:

Retrieval Utilities: Relevance feedback, Clustering, N-Grams, Regression Analysis, Thesauri, Evaluation in information retrieval.

Unit III:

Retrieval Utilities: Semantic Networks, Parsing.

Cross-Language Information Retrieval: Introduction, Crossing the language Barrier

Unit IV:

Efficiency: Inverted Index, Query Processing, Signature files, Duplicate Document detection, Matrix decompositions and latent semantic indexing.

Unit V:

Integrating Structure Data and text: A historical Progression, Information Retrieval as a relational Application, Semi-Structured search using a Relational Schema.

Distributed Information Retrieval: A theoretical Model of Distributed Retrieval, Web Search

Textbooks:

1. David A.Grossman, Ophir Frieder, Information Retrieval-Algorithms and Heuristics, Springer, 2nd Edition (Distributed by Universities Press), 2004.

References:

1. Gerald J Kowalski, Mark T Maybury. Information Storage and Retrieval Systems, Springer, 2000.
2. Information Storage & Retieval By Robert Korfhage – John Wiley & Sons.
3. Introduction to Information Retrieval By Christopher D. Manning and Prabhakar Raghavan, Cambridge University Press, 2008.
4. Sounen Chakrabarti, Miming the Web: Discovering Knowledge from Hypertext data, Morgan-Kaufmann Publishers,2002.

Outcomes:

- Possess the ability to store and retrieve textual documents using appropriate models.
- Possess the ability to use the various retrieval utilities for improving search.
- Possess an understanding of indexing and compressing documents to improve space and time efficiently.
- Possess the skill to formulate SQL like queries for unstructured data.
- Understand issues in web search.

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(A1525) MIDDLEWARE TECHNOLOGIES (ELECTIVE-III)

Objectives:

- IT systems are more and more integrated with other software systems.
- The knowledge of integrating these systems by using middleware technologies can be a key competence for IT engineers. Middleware is commonly understood as an intermediary software layer between the application and the operating system, which encapsulates the heterogeneity of the underlying communication network, operating system or hardware platform.
- This course provides details about the modern component platforms. Based on practical examples, details about modern middleware technologies are studied.
- Students get the chance to gain in-depth knowledge popular middleware platforms.

UNIT-I

Introduction to client server computing: Evolution of corporate computing models from centralized to distributed computing, client server models. Benefits of client server computing, pitfalls of client server programming.

UNIT-II

CORBA with Java: Review of Java concept like RMI, RMI API, JDBC, Client/Server CORBA-style.

The object web: CORBA with Java.

Introducing C# and the .NET Platform: Understanding .NET Assemblies, Object –Oriented Programming with C#, Callback Interfaces, Delegates and Events.

UNIT III

Building c# applications: Type Reflection, Late Binding and Attribute-Based Programming, Object Serialization and the .NET Remoting Layer, Data Access with ADO.NET, XML Web Services.

Core CORBA / Java: Two types of Client/ Server invocations-static, dynamic, The static CORBA, first CORBA program, ORBlets with Applets, Dynamic CORBA-The portable count, the dynamic count multicount.

UNIT-IV

Existential CORBA: CORBA initialization protocol, CORBa activation services, CORBAIDL mapping CORBA java- to- IDL mapping, The introspective CORBA/Java object.

Java Bean Component Model: Events, properties, persistency, Intrespection of beans, CORBA

Beans.

UNIT-V

EJBs and CORBA: Object transaction monitors CORBA OTM's, EJB and CORBA OTM's, EJB container frame work, Session and Entity Beans, The EJB client/server development Process The EJB container protocol, support for transaction EJB packaging EJB design Guidelines.

TEXT BOOKS :

1. Client/Server programming with Java and CORBA Robert Orfali and Dan Harkey, John Wiley & Sons, SPD 2nd Edition.
2. Java programming with CORBA 3rd Edition, G.Brose, A Vogel and K.Duddy, Wiley-dreamtech, India John wiley and sons.

REFERENCES :

1. Distributed Computing, Principles and applications, M.L.Liu, Pearson Education.
2. Client/Server Survival Guide 3rd edition Robert Orfali Dan Harkey & Jeri Edwards, John Wiley & Sons.
3. Client/Server Computing D T Dewire, TMH.
4. IBM Webspere Starter Kit Ron Ben Natan Ori Sasson, TMh, New Delhi
5. Programming C#, Jesse Liberty, SPD-O'Reilly.
6. C# Preciesely Peter Sestoft and Henrik I. Hansen, Prentice Hall of India
7. Intoduction to C# Using .NET Pearson Education.
8. C# How to program, Pearson Education.
9. C# and the .NET Platform Andrew Troelsen, Apress Wiley-dreamtech, India Pvt Ltd.

Outcomes:

- Ability to design the integrates system with different softwares.
- Ability to create simple interface between the software and hardware.

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(A1527) SEMANTIC WEB & SOCIAL NETWORKS
(ELECTIVE- III)

Objectives:

- To learn Web Intelligence.
- To learn knowledge representation for the semantic web.
- To learn ontology engineering.
- To learn semantic web applications, services and technology.
- To learn social network analysis and semantic web.

UNIT –I:

Thinking and Intelligent Web Applications, The Information Age,The World Wide Web, Limitations of Today's Web, The Next Generation Web, Machine Intelligence, Artificial Intelligence, Ontology, Inference engines, Software Agents, Berners-Lee www, Semantic Road Map, Logic on the semantic Web.

UNIT -II:

Ontologies and their role in the semantic web, Ontologies Languages for the Semantic Web –Resource Description Framework(RDF) / RDF Schema, Ontology Web Language(OWL), UML, XML/XML Schema.

Ontology Engineering, Constructing Ontology, Ontology Development Tools, Ontology Methods, Ontology Sharing and Merging, Ontology Libraries and Ontology Mapping.

UNIT-III:

Logic, Rule and inference Engines. Semantic Web applications and services, Semantic Search, e-learning, Semantic Bioinformatics, Knowledge Base.

UNIT-IV:

XML based Web Services, Creating an OWL-S ontology for Web Services, Semantic Search Technology, Web Search Agents and Semantic Methods, What is social Network analysis, development of the social networks analysis, Electronic Sources for Network Analysis- Electronic Discussion networks.

UNIT-V:

Blogs and Online communities, Web Based Networks. Building Semantic Web Applications with social features.

TEXT BOOKS:

1. Thinking on the Web - Berners Lee, Godel and Turing, Wiley inter science, 2008.
2. Social Networks and the Semantic Web, Peter Mika, Springer, 2007.

REFERENCE BOOKS:

1. Semantic Web Technologies, Trends and Research in Ontology Based Systems, J.Davies, R.Studer, P.Warren, John Wiley & Sons.
2. Semantic Web and Semantic Web Services -Liyang Lu Chapman and Hall/CRC Publishers,(Taylor & Francis Group)
3. Information Sharing on the semantic Web - Heiner Stuckenschmidt; Frank Van Harmelen, Springer Publications.
4. Programming the Semantic Web, T.Segaran, C.Evans, J.Taylor, O'Reilly, SPD.

Outcomes:

- Ability to understand and knowledge representation for the semantic web.
- Ability to create ontology.
- Ability to build a blogs and social networks.

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(A1514) COMPUTER FORENSICS
(ELECTIVE -III)

Objectives:

- A brief explanation of the objective is to provide digital evidences which are obtained from digital media.
- In order to understand the objectives of computer forensics, first of all, people have to recognize the different roles computer plays in a certain crime.
- According to a snippet from the United States Security Service, the functions computer has in different kinds of crime.

Unit I:

Computer Forensics Fundamentals: What is Computer Forensics? Use of computer Forensics in Law Enforcement, Computer Forensics Assistance to Human Resources/Employment Proceedings, Computer Forensics services, Benefits of Professional Forensics Methodology, Steps taken by Computer Forensics Specialists.

Types of computer Forensics Technology: Types of Military Computer Forensic Technology, Types of Law Enforcement-Computer Forensic Technology-Types of Business Computer Forensic Technology

Computer Forensics Evidence and Capture: Data Recovery Defined-Data Back-up and Recovery-The Role of Back-up in Data Recovery-The Data –Recovery Solution

Unit II:

Evidence Collection: Why Collect Evidence? Collections Options, Obstacles, Types of Evidence, The Rules of Evidence, Volatile Evidence-General Procedure – Collection and Archiving –Methods of Collection-Artifacts- Collecton Steps-Controlling contamination: The Chain of custody

Duplication and Preservation of Digital Evidence: Preserving the Digital Crime Scene, Computer Evidence Processing Steps, Legal Aspects of Collecting and Preserving Computer Forensic Evidence

Computer Image Verification and Authentication: Special Needs of Evidential Authentication, Practical Consideration, Practical Implementation

Unit III:

Computer Forensics analysis and Validation: Determining what data to collect and analyze, validating forensic data, addressing data-hiding techniques, performing remote acquisitions

Network Forensics: Network forensics overview, performing live acquisitions, developing standard procedures for network forensics, using network tools, examining the honey net project.

Processing Crime and Incident Scenes: Identifying digital evidence, collecting evidence in private-sector incident scenes, processing law enforcement crime scenes, preparing for a search,

Securing a computer incident or crime scene, seizing digital evidence at the scene, storing digital evidence, obtaining a digital hash, reviewing a case

Unit IV:

Current computer Forensic tools: Evaluating computer forensic tool needs, computer forensics software tools, computer forensics hardware tools, validating and testing forensics software

Email Investigations: Exploring the Role of E-Mail in Investigation, Exploring the Role of Client and Server in E-Mail, Investigating E-Mail Crimes and Violations, Understanding E-Mail Servers, Using Specialized E-Mail Forensic Tools.

Cell Phone and Mobile Device Forensics: Understanding Mobile Device Forensics, Understanding Acquisition Procedures for Cell Phones and Mobile Devices.

Unit V:

Working with windows and DOS Systems: understanding file systems, exploring Microsoft File Structures, examining NTFS disks, Understanding whole disk encryption, windows registry, Microsoft startup tasks,MS-DOS startup tasks, virtual machines.

Textbooks:

1. Guide to Computer Forensics and Investigations by Nelson, Phillips, Steuart, 3rd Edition CENGAGE Learning
2. Computer Forensics, Computer crime investigation by Jhon R.Vacca, Firewall Media, New Delhi.

References:

1. Computer Evidence: Collection and Preservation, by Christopher L. T. Brown, 2nd Edition, CENGAGE Learning
2. Real Digital Forensics by Keith J. Jones, Richard Bejtlich, Curtis W. Rose, Addison- Wesley Pearson Education
3. Forensic Compiling, A Practitioner's Guide by Tony Sammes and Brian Jenkinson, Springer International edition.
4. Computer Evidence Collection & Presentation by Christopher L.T. Brown, Firewall Media.
5. Software Forensics Collecting Evidence from the Scene of a Digital Crime by Robert M.Slade, TMH 2005
6. Windows Forensics by Chad Steel, Wiley India Edition.

Outcomes:

- Students will understand the usage of computer in forensics, and how to use various forensic tools for a wide variety of investigations.
- It gives an opportunity to students to continue their zeal in research in computer forensics.

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(A1529) CLOUD COMPUTING

Objectives:

- To explain the evolving computer model called cloud computing
- To introduce the various levels of services that can be achieved by cloud
- To describe the security aspects in the cloud.

UNIT-I

System Modeling, Clustering and Virtualization: Distributed system models and Enabling Technologies, Computer Clusters for Scalable Parallel Computing, Virtualization machines an Virtualization of clusters and Data centers.

Case Study: Walk through in to Ubuntu 12.04 Operating System.

Unit-II

Foundations: Introduction to cloud computing, Migrating into a cloud, Enriching the 'Integration as a Service' Paradigm for the cloud Era, The Enterprise Cloud Computing Paradigm.

Unit-III

Infrastructure as a Service(IAAS) & Platform and Software as a Service(PAAS/SAAS): Virtual machines provisioning and migration services, On the Management of Virtual machines for Cloud Infrastructure, Enhancing Cloud Computing Environments using a cluster as a Service, Secure Distributed Data Storage in Cloud Computing.

Aneka, Comet Cloud, T-System, Workflows Engine for Clouds, Understanding Scientific, Applications for Cloud Environments.

Unit-IV

Monitoring, Management and Applications: An Architecture for Federated Cloud Computing, SLA Management in Cloud Computing, Performance Prediction for HPC on Clouds, Best Practices in Architecting Cloud Applications in the AWS Cloud, Building Content Delivery networks using Clouds, Resource Cloud Mashups.

Case Study: Apache hbase 0.92.1, Apache hadoop 2.2.0.

Unit-V

Governance and Case Studies: Organizational Readiness and Changes management in the Cloud age, Data, Security in the Cloud, Legal Issues in Cloud computing, Achieving Production Readiness for Cloud Services.

TEXT BOOKS:

1. Cloud Computing: Principles and Paradigms by Rajkumar Buyya, James Broberg and Andrzej M. Goscinski, Wiley,2011.
2. Distributed and Cloud Computing, Kai Hwang, Geoffery C,Fox, Jack J. Dongarra, Elsevier, 2012.

REFFERENCES BOOKS:

1. Cloud Computing: A Practical Approach, Anthony T. Velte, Toby J.Velte, Robrt Elsenpeter, Tata McGraw Hill, 2011.
2. Enterprise Cloud Computing, Gautam Shroff, Cambridge University Press, 2010.
3. Cloud Computing: Implementation, Management and Security, John W. Rittinghouse, James F.Ransome, CRC Press, rp2012.
4. Cloud Application Architectures: Building Applications and Infrastructure in the cloud, George Reese, O'Reilly, SPD, rp2011.
5. Cloud Security and Privacy: An Enterprise Perspective on Risks and Compliance, Tim Mather, Subra Kumaraswamy, Shahed Latif, O'Reilly, SPD, rp2011.

Outcomes:

- Ability to understand the virtualization and cloud computing concepts.

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(A1421) EMBEDDED SYSTEMS DESIGN

UNIT I

Introduction to Embedded Systems: Definition of Embedded System, Embedded Systems Vs General Computing Systems, History of Embedded Systems, Classification, Major Application Areas, Purpose of Embedded Systems, Characteristics and Quality Attributes of Embedded Systems.

UNIT II

Typical Embedded System: Core of the Embedded System: General Purpose and Domain Specific Processors, ASICs, PPLDs, Commercial Off- The- Shelf Components (COTS), Memory,: ROM, RAM, Memory according to the type of Interface, Memory Shadowing, Memory selection for Embedded Systems, Sensors and Actuators, Communication Interface: Onboard and External Communication Interfaces.

UNIT –III

Embedded Firmware: Reset Circuit, Brown-out Protection Circuit, Oscillator Unit, Real Time Clock, Watchdog Timer, Embedded Firmware Design Approaches and Development Languages.

UNIT – IV

RTOS Based Embedded System Design: Operating System Basics, Types of Operating Systems, Tasks, Process and Threads, Multiprocessing and Multitasking, Task Scheduling.

UNIT V:

Task Communication: Shared Memory, Message Passing, Remote Procedure Call and Sockets, Task Synchronization: Task Communication/ Synchronization issues, Task Synchronization Techniques, Device Drivers, How to choose an RTOS.

TEXT BOOK:

1. Introduction to Embedded Systems – Shibu K.V. Mc Graw Hill

REFERENCE BOOKS:

2. Embedded Systems – Raj Kamal, TMH
3. Embedded System Design – Frank Vahid, Tony Givargis, John Wiley.
4. Embedded Systems – Lyla, Pearson, 2013
5. An Embedded Software Primer- David E Simon, Pearson Education

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(A1530) BIG DATA ANALYTICS

COURSE OBJECTIVES:

- To explore the fundamental concepts of big data analytics
- To learn to analyze the big data using intelligent techniques.
- To understand the various search methods and visualization techniques.
- To learn to use various techniques for mining data stream.
- To understand the applications using Map Reduce Concepts

Unit I

INTRODUCTION TO BIG DATA

Introduction to BigData Platform – Challenges of Conventional Systems - Intelligent data analysis – Nature of Data - Analytic Processes and Tools - Analysis vs Reporting - Modern Data Analytic Tools - Statistical Concepts: Sampling Distributions - Re-Sampling - Statistical Inference - Prediction Error

Unit II

MINING DATA STREAMS

Introduction To Streams Concepts – Stream Data Model and Architecture - Stream Computing - Sampling Data in a Stream – Filtering Streams – Counting Distinct Elements in a Stream – Estimating Moments – Counting Oneness in a Window – Decaying Window - Real time Analytics Platform(RTAP)

Applications - Case Studies - Real Time Sentiment Analysis, Stock Market Predictions.

Unit III

HADOOP

History of Hadoop- The Hadoop Distributed File System – Components of Hadoop- Analyzing the Data with Hadoop- Scaling Out- Hadoop Streaming- Design of HDFS-Java interfaces to HDFS-Basics-Developing a Map Reduce Application-How Map Reduce Works-Anatomy of a Map Reduce Job run-Failures-Job Scheduling-Shuffle and Sort – Task execution - Map Reduce Types and Formats- Map Reduce Features.

Unit IV

HADOOP ENVIRONMENT

Setting up a Hadoop Cluster - Cluster specification - Cluster Setup and Installation - Hadoop Configuration-Security in Hadoop - Administering Hadoop – HDFS - Monitoring-Maintenance-Hadoop benchmarks- Hadoop in the cloud

Unit V

FRAMEWORKS

Applications on Big Data Using Pig and Hive – Data processing operators in Pig – Hive services – HiveQL – Querying Data in Hive - fundamentals of HBase and ZooKeeper - IBM InfoSphere BigInsights and Streams. Visualizations - Visual data analysis techniques, interaction techniques; Systems and applications

TEXT BOOKS:

1. Michael Berthold, David J. Hand, "Intelligent Data Analysis", Springer, 2007.
2. Tom White " Hadoop: The Definitive Guide" Third Edition, O'reilly Media, 2012.

REFERENCES

1. Chris Eaton, Dirk DeRoos, Tom Deutsch, George Lapis, Paul Zikopoulos, "Understanding Big Data: Analytics for Enterprise Class Hadoop and Streaming Data", McGrawHill Publishing, 2012
2. Anand Rajaraman and Jeffrey David Ullman, "Mining of Massive Datasets", Cambridge University Press, 2012.
3. Bill Franks, "Taming the Big Data Tidal Wave: Finding Opportunities in Huge Data Streams with Advanced Analytics", John Wiley & sons, 2012.
4. Glenn J. Myatt, "Making Sense of Data", John Wiley & Sons, 2007
5. Pete Warden, "Big Data Glossary", O'Reilly, 2011.
6. Jiawei Han, Micheline Kamber "Data Mining Concepts and Techniques", Second Edition, Elsevier, Reprinted 2008.
7. Da Ruan,Guoquing Chen, Etienne E.Kerre, Geert Wets, Intelligent Data Mining, Springer,2007
8. Paul Zikopoulos ,Dirk deRoos , Krishnan Parasuraman , Thomas Deutsch , James Giles , David Corrigan , Harness the Power of Big Data The IBM Big Data Platform, Tata McGraw Hill Publications, 2012
9. Michael Minelli (Author), Michele Chambers (Author), Ambiga Dhiraj (Author) , Big Data, Big Analytics: Emerging Business Intelligence and Analytic Trends for Today's Businesses,Wiley Publications,2013
10. Zikopoulos, Paul, Chris Eaton, Understanding Big Data: Analytics for Enterprise Class Hadoop and Streaming Data, Tata McGraw Hill Publications, 2011

COURSE OUTCOMES:

The students will be able to:

- Work with big data platform
- Analyze the big data analytic techniques for useful business applications.
- Design efficient algorithms for mining the data from large volumes.
- Analyze the HADOOP and Map Reduce technologies associated with big data analytics
- Explore on Big Data applications Using Pig and Hive
- Understand the fundamentals of various bigdata analysiss techniques

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(A1551) HADOOP LAB

Course objectives:

The student will become familiar with the fundamental concepts of Big Data management and analytics; will become competent in recognizing challenges faced by applications dealing with very large volumes of data as well as in proposing scalable solutions for them; and will be able to understand how Big Data impacts business intelligence, scientific discovery, and our day-to-day life.

Hardware and software Requirements:

- There is no single hardware requirement set for installing Hadoop.
- Red Hat Enterprise Linux (RHEL) v5.x or 6.x (64-bit)
- SUSE Linux Enterprise Server (SLES) 11, SP1 (64-bit)
- Apache Hadoop or download Cloudera's distribution of Apache Hadoop
- Apache Hive, Hive or HCatalog requires a MySQL database for its use.
- Pig,JDK

LIST OF PROGRAMS:

1. Install and test Apache Hadoop distributed file system(HDFS) and Setting up Hadoop on your machineand execute HDFS commands.
2. Importing and exporting data into HDFS using Hadoop shell commands
3. Reading and writing data to HDFS and Setting the replication factor for HDFS.
4. Write a WordCount MapReduce sample program, bundling it, and running it using standalone Hadoop.
5. Write a program to calculate histograms using MapReduce.
6. Write a program to calculate scatter plots using MapReduce.
7. Hive programming:

Detailed Installation of Hive and Starting Hive.

a) Create Managed and External Tables
b) Drop Tables
c) Alter Table
d) Rename a Table
e) Add Columns Delete or Replace Columns
f) Load Data into Managed Tables
g) Insert Data into Tables from Queries
h) Export Data
i) SELECT … FROM Clauses

j) CASE … WHEN … THEN Statements
k) WHERE Clauses
l) LIKE and RLIKE
m) GROUP BY Clauses
n) HAVING Clauses
o) JOIN Statements
p) ORDER BY and SORT BY
q) DISTRIBUTE BY with SORT BY
r) CLUSTER BY
s) sample json data processing in HIVEQL

8. Pig programming:

a) Downloading and Installing Pig, Running Pig Locally on Your Machine.
b) HDFS Commands in Grunt Controlling Pig from Grunt
c) Input and output (Load, Store and Dump)
d) Relational operations

Text Books:

1. Hadoop MapReduce Cookbook By Srinath Perera
2. Hadoop Real-World Solutions Cookbook By Jonathan R. Owens, Brian Femiano, Jon Lentz
3. Programming Hive By Edward Capriolo, Dean Wampler, Jason Rutherglen
4. Programming Pig By Alan Gates

Reference Books:

1. Hadoop in Action by Chuck Lam
2. Hadoop in Practice by Alex Holmes
3. Big Data for Dummies by Judith Hurwitz, Alan Nugent, Dr. Fern Halper, Marcia Kaufman
4. Hadoop Beginners guide by Garry Turkington
5. Hadoop the Definitive guide 3edition by Tom White O'reilly publications

Outcomes:

By the end of the course the student will be able to:

1. analyze big data and create statistical models
2. Use tools such as MapReduce/Hadoop Hive and Pig.
3. querying and managing large datasets residing in distributed storage.
4. Access to files stored either directly in Apache HDFSTM or in other data storage systems such as Apache HBaseTM

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(A1552) CASE TOOLS & SOFTWARE TESTING

PART-A

SOFTWARE TESTING

OBJECTIVES OF THE LAB

- Testing is a process of executing a program with the intent of finding an error.
- A good test case is one that has a high probability of finding an as yet undiscovered error.
- A successful test is one that uncovers an as yet undiscovered error.

List of Experiments

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."

OUTCOMES

- Upon completion of the lab , students will be able to understands the process to be followed in the software development life cycle
- students will be able to find practical solutions to the problems
- students will be able to solve specific problems alone or in teams
- students will be able to manage a project from beginning to end

- students will be able to work independently as well as in teams
- students will be able to define, formulate and analyze a problem

Objectives:

- To obtain practical experience using data mining techniques on real world data sets.
- Emphasize hands-on experience working with all real data sets.

PART-B

Case Tools Lab

Objectives:

- To understand how UML supports the entire OOAD process.
- To become familiar with all phases of OOAD.
- To understand different software testing tools and their features

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 falls 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.

Outcomes:

- Ability to understand the history, cost of using and building CASE tools.
- Ability to construct and evaluate hybrid CASE tools by integrating existing tools.

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(AUTONOMOUS)

B.Tech VIII - Sem

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(A1022) MANAGEMENT SCIENCE

Objectives:

- Understand the concepts of management Administration and find & the difference between Organizing and organization and principles of Organization.
- Identifies the factors determining plant location and explain the concepts of plant layout, Marketing functions and the concepts of marketing and selling and channels of distribution.
- Understand the concept of job analysis, job description and job specification and the concepts of network, PERT and CPM& Understanding the direct cost and indirect cost.
- To identify the internal and external environmental factors and SWOT Analysis.
- The widely known concepts and practices prevalent in modern business and service Organization.

UNIT I:Introduction to Management &Organization:

Introduction to Management : Concepts of Management and organization- nature, importance and Functions of Management, Taylor's Scientific Management Theory, Fayol's Principles of Management, Mayo's Hawthorne Experiments, Maslow's Theory of Human Needs, Douglas McGregor's Theory X and Theory Y, Herzberg's Two-Factor Theory of Motivation, Systems Approach to Management, Leadership Styles, Social responsibilities of Management.

UNIT II: Operations& Marketing Management:

Principles and types of plant layout-Methods of Production, Work study Basic procedure involved in method study and Work Measurment-Business process reengineering Statistical Quality Control:control charts for variables and Attributes and Acceptance sampling, Total Quality Management (TQM), Six sigma, Deming's contribution to quality, objectives of inventory control EOQ, ABC Analysis, Functions of marketing, marketing mix, marketing Strategies based on product life cycle, channels of distribution.

UNIT III: Human Resource Management:

Human Resources Management (HRM) : Concepts of HRM, HRD and Personnel Management and Industrial Relations (PMIR), HRMvs.PMIR, Basic functions of HR Manager: Manpower planning, Recruitment, Selection, Training and Development, Placement, Wage and Salary Administration, Promotion, Transfer, Separation, Performance Appraisal, Grievance Handling and Welfare Administration, Job Evaluation andMeritRating.

UNIT IV: Project Management:

Project Management (PERT/CPM) : Network Analysis, Programme Evaluation and Review Technique (PERT), Critical Path Method (CPM), Identifying critical path, Probability of Completing the project within given time, Project Cost Analysis, Project Crashing. (simple problems)

UNIT V:Strategic Management and Contemporary Strategic Issues:

Strategic Management : Mission, Goals, Objectives, Policy, Strategy, Programmes, Elements of Corporate Planning Process, Environmental Scanning, Value Chain Analysis, SWOT Analysis, Steps in Strategy Formulation and Implementation, Generic Strategy alternatives. Bench Marking and Balance Score Card as contemporary Business Strategies.

TEXT BOOKS:

1. Aryasri: Management Science, McGraw Hill,2012.
2. Vijay kumar and Apparao Management Science, Cenage,2012.

REFERENCES:

1. Kotler Philip & Keller Kevin Lane: Marketing Mangement,pearson,2012
2. Koontz &Weihrich: Essentials of Management, McGraw Hill,2012.
3. Thomas N.Duening& John M.Ivancevich Management—Principles and Guidelines, Biztantra,2012.
4. KanishkaBedi, Production and Operations Management, Oxford University Press, 2012.
5. Schermerhorn, Capling, Poole &Wiesner: Management, Wiley, 2012.
6. Parnell: Strategic Management, Cengage2012.
7. Lawrence R Jauch, R.Gupta&William F.Glueck:Business Policy and Strategic Management, Frank Bros.2012.

Outcomes:

- Understanding the Organization environment and which kind of structure they have to follow to reach the Department goal after next Organization goal.
- Understanding before start the plant what are the factors they have to check and they know the production and to utilize the each and every raw materials.
- Knowing the recruitment of each and every employee, how they can show the performance appraisal and knowing the logical thinking to complete the work within the time period.
- Knowing the MISSION, VISION and OBJECTIVE Of corporate company and how to reach all those things and how to implement the strategy to reach the corporate goal.
- Knowing the just in time and how to maintain the quality and others.

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(A1526) E-COMMERCE

Objectives:

- Identify the major categories and trends of e-commerce applications.
- Identify the essential processes of an e-commerce system.
- Identify several factors and web store requirements needed to succeed in e-commerce.
- Discuss the benefits and trade-offs of various e-commerce clicks and bricks alternatives.
- Understand the main technologies behind e-commerce systems and how these technologies interact.
- Discuss the various marketing strategies for an online business.
- Define various electronic payment types and associated security risks and the ways to protect against them.

UNIT – I

Introduction, Electronic Commerce - Frame work, anatomy of E-Commerce applications, e-Commerce Consumer applications, E-Commerce organization applications. Introduction, Consumer Oriented Electronic commerce - Mercantile Process models.

UNIT – II

Electronic payment systems - Digital Token-Based, Smart Cards, Credit Cards, Risks in Electronic Payment systems. Inter Organizational Commerce - EDI, EDI Implementation, Value added networks.

UNIT-III

Intra Organizational Commerce - work Flow, Automation Customization and internal Commerce, Supply chain Management.

UNIT –IV

Corporate Digital Library - Document Library, digital Document types, corporate Data Warehouses. Advertising and Marketing - Information based marketing, Advertising on Internet, on-line marketing process, market research.

UNIT – V

Consumer Search and Resource Discovery - Information search and Retrieval, Commerce Catalogues, Information Filtering. Multimedia - key multimedia concepts, Digital Video and electronic Commerce, Desktop video processing's, Desktop video conferencing.

TEXT BOOK:

1. Frontiers of electronic commerce – Kalakata, Whinston, Pearson.

REFERENCES:

1. E-Commerce fundamentals and applications Hendry Chan, Raymond Lee, Tharam Dillon, Ellizabeth Chang, John Wiley.
2. E-Commerce, S.Jaiswal – Galgotia.
3. E-Commerce, Efrain Turbon, Jae Lee, David King, H.Michael Chang.

Outcomes:

- Ability to identify the business relationships between the organizations and their customers.
- Ability to perform various transactions like payment, data transfer and etc..

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(A1528) WEB SERVICES
(ELECTIVE - IV)

Objectives:

- To understand the details of Web Services technologies: SOAP, WSDL, UDDI.
- To learn how to implement and deploy web service clients and servers.
- To explore interoperability between different frameworks.
- To learn basic concepts of SOA.

UNIT-I

Evolution and Emergence of Web Services - Evolution of distributed computing, core distributed computing technologies- Client/server, COBRA, JAVA, RMI, Microsoft DCOM, MOM, challenges in distributed computing, role of J2EE and XML in distributed computing, Common characteristics of contemporary SOA, Emergence of web services and Service Oriented Architecture(SOA).

Introduction to Web Services- The definition of web services, How a Web Service Works , Basic operational model of web services, Tools and technologies enabling web services, Benefits and challenges of using web services.

Web Services Architecture- Web Services Architecture and its characteristics, Core building blocks of web services, Standards and technologies available for implementing web services, Web services communication models, Basic steps of implementing web services.

UNIT-II

fundamentals of SOAP- SOAP message structure, SOAP encoding, Encoding of different data types, SOAP message exchange models, SOAP communication and messaging, Java & Axis, Limitations of SOAP.

UNIT-III

Describing Web Services- WSDL- WSDL in the world of Web Services, Web Services life cycle, anatomy of WSDL definition document, WSDL bindings, WSDN tools, limitation of WSDL,

UNIT-1V

Discovering Web Services- Service discovery, role of services discovery in a SOA, Service discovery mechanisms, UDDI- UDDI Registries, uses of UDDI Registry, Programming with UDDI, UDDI data structures, Publishing API, publishing, Searching and deleting information in a UDDI Registry, Limitations of UDDI.

UNIT-V

WEB SERVICES INTEROPERABILITY-Means of ensuring interoperability, Overview of

.NET, Creating a .NTE client for an Axis web service, Creating java client for a web service, Challenges in web services interoperability.

Web services security-XML security frame work, goals of cryptography, hash cipher, symmetric cipher, asymmetric cipher, XML encryption, digital signature, digital certificate, XML encryption, SAML, structure.

TEXT BOOKS:

1. Developing java web services, R.Nagappan, R.Skoczylas, R.P.Sriganesh, Wiley India, RP-2008

REFERENCE BOOKS:

1. Building web services with java, 2nd Edition, S.Graham and others, Pearson Edition-2008.
2. Java web services, D.A.Chappell and T.Jewell, O'Reilly,SPD.
3. MCGOVERN, ET AL.," Java web service architecture", Morgan Kaufmann Publishers-2005.
4. J2EE web services, Richard Monson-Haefel, Pearson Education.
5. Web services, G.Alonso, F.Casati and others, Springer-2005.
6. Developing enterprise web services, S.Chatterjee, J.Webber, Pearson Education -2008.
7. XML, web services and data revolution, F.P.Coyle, Pearson Education.
8. Understanding SOA with web services, Eric Newcomer and Greg Lomow, Pearson Edition-2009
9. Java web service architecture, James MCgovern, Sameer Tyagi et al, Elsevier-2009.

Outcomes:

- Basic details of WSDL, UDDI, SOAP.
- Implement WS client and server with interoperable systems.

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B.Tech VIII - Sem

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(A1533) SOFTWARE PROJECT MANAGEMENT

(ELECTIVE-IV)

Objectives:

The main goal of software development projects is to create a software system with a predetermined functionality and quality in a given time frame and with given costs. For achieving this goal, models are required for determining target values and for continuously controlling these values. This course focuses on principles, techniques, methods & tools for model-based management of software projects, assurance of product quality and process adherence (quality assurance), as well as experience-based creation & improvement of models (process management). The goals of the course can be characterized as follows:

- Understanding the specific roles within a software organization as related to project and process management.
- Understanding the basic infrastructure competences (e.g., process modeling and measurement).
- Understanding the basic steps of project planning, project management, quality assurance and process management and their relationships.

UNIT–I

Conventional Software Management: The waterfall model, conventional software Management performance.

Evolution of Software Economics: Software Economics, pragmatic software cost estimation.

UNIT–II

Improving Software Economics: Reducing Software product size, improving software processes, improving team effectiveness, improving automation, achieving required quality, peer inspections.

The old way and the new: The principles of conventional software Engineering, principles of modern software management, transitioning to an iterative process.

UNIT-III

Life cycle phases: Engineering and production stages, inception, Elaboration, construction, transition phases.

Artifacts of the process: The artifact sets, Management artifacts, Engineering artifacts, programmatic artifacts.

Model based software architectures: A Management perspective and technical perspective.

UNIT–IV

Work Flows of the process: Software process workflows, Inter trans workflows.

Checkpoints of the process: Major mile stones, Minor Milestones, Periodic status assessments.

Iterative Process Planning: Work breakdown structures, planning guidelines, cost and schedule estimating, Interaction planning process, Pragmatic planning.

Project Organizations and Responsibilities:

Line-of-Business Organizations, Project Organizations, evolution of Organizations.

Process Automation: Automation Building blocks, The Project Environment.

UNIT–V

Project Control and Process instrumentation:

The server care Metrics, Management indicators, quality indicators, life cycle expectations, pragmatic Software Metrics, Metrics automation.

Talloring the Process: Process discriminants, Example.

Future Software Project Management: Modern Project Profiles Next generation. Software economics, modern process transitions.

Case Study: The command Center Processing and Display system- Replacement (CCPDS-R).

TEXT BOOKS:

1. Software Project Management, Walker Royce: Pearson Education.
2. Software Project Management, Bob Hughes & Mike Cotterell, fourth edition, Tata Mc-Graw Hill.

REFERENCES:

1. Applied Software Project Management, Andrew Stellman & Jennifier Greene, O'Reilly,2006.
2. Head First PMP, Jennifier Greene & Andrew Stellman O'Reilly, 2007.
3. Software Engineering Project Management, Richard H, Thayer & Edward Yourdan, second edition, wiley india 2004.
4. Software Project Management in practice, Pankaj Jalote, Pearson Education.2002.

Outcomes:

- Describe and determine the purpose and importance of project management from the perspectives of planning, tracking and completion of project.
- Compare and differentiate organization structures and project structures.
- Implement a project to manage project schedule, expenses and resources with the application of suitable project management tools.

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(A1534) NATURAL LANGUAGE PROCESSING (ELECTIVE-IV)

Objectives:

- To acquire basic understanding of linguistic concepts and natural language complexity, variability.
- To acquire basic understanding of machine learning techniques as applied to language.
- To implement N-grams Models.

UNIT I

Introduction and Overview What is Natural Language Processing, hands-on demonstrations. Ambiguity and uncertainty in language. The Turing test.

Regular Expressions Chomsky hierarchy, regular languages, and their limitations. Finite-state automata. Practical regular expressions for finding and counting language phenomena. A little morphology. Exploring a large corpus with regex tools.

Programming in Python An introduction to programming in Python. Variables, numbers, strings, arrays, dictionaries, conditionals, iteration. The NLTK (Natural Language Toolkit)

String Edit Distance and Alignment Key algorithmic tool: dynamic programming, a simple example, use in optimal alignment of sequences. String edit operations, edit distance, and examples of use in spelling correction, and machine translation.

UNIT II

Context Free Grammars Constituency, CFG definition, use and limitations. Chomsky Normal Form. Top-down parsing, bottom-up parsing, and the problems with each. The desirability of combining evidence from both directions

Non-probabilistic Parsing Efficient CFG parsing with CYK, another dynamic programming algorithms. Early parser. Designing a little grammar, and parsing with it on some test data.

Probability Introduction to probability theory Joint and conditional probability, marginals, independence, Bayes rule, combining evidence. Examples of applications in natural language.

Information Theory The "Shannon game"--motivated by language! Entropy, crossentropy, information gain. Its application to some language phenomena.

UNIT III

Language modeling and Naive Bayes Probabilistic language modeling and its applications. Markov models. N-grams. Estimating the probability of a word, and smoothing. Generative models of language. Part of Speech Tagging and Hidden Markov Models, Viterbi Algorithm for Finding Most Likely HMM Path Dynamic programming with Hidden Markov Models, and its use for part-of-speech tagging, Chinese word segmentation,

prosody, information extraction, etc.

UNIT IV

Probabilistic Context Free Grammars Weighted context free grammars. Weighted CYK. Pruning and beam search.

Parsing with PCFGs A tree bank and what it takes to create one. The probabilistic version of CYK. Also: How do humans parse? Experiments with eye-tracking. Modern parsers.

Maximum Entropy Classifiers The maximum entropy principle and its relation to maximum likelihood. Maximum entropy classifiers and their application to document classification, sentence segmentation, and other language tasks

UNIT V

Maximum Entropy Markov Models & Conditional Random Fields Part-of-speech tagging, noun-phrase segmentation and information extraction models that combine maximum entropy and finite-state machines. State-of-the-art models for NLP.

Lexical Semantics Mathematics of Multinomial and Dirichlet distributions, Dirichlet as a smoothing for multinomial's.

TEXT BOOKS:

1. "Speech and Language Processing": Jurafsky and Martin, Prentice Hall

2. "Statistical Natural Language Processing"- Manning and Schutze, MIT Press

3. "Natural Language Understanding". James Allen. The Benajmins/Cummings Publishing Company

REFERENCES BOOKS:

1. Cover, T. M. and J. A. Thomas: Elements of Information Theory. Wiley.

2. Charniak, E.: Statistical Language Learning. The MIT Press.

3. Jelinek, F.: Statistical Methods for Speech Recognition. The MIT Press.

4. Lutz and Ascher - "Learning Python", O'Reilly