ACADEMIC REGULATIONS

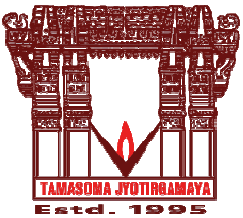
COURSE STRUCTURE AND

DETAILED SYLLABUS

Computer Science and Engineering

B.TECH. FOUR YEAR DEGREE COURSE

(Applicable for the batches admitted from 2013-2014)



VNR VIGNANA JYOTHI INSTITUTE OF ENGINEERING AND TECHNOLOGY

An Autonomous Institute

Approved by AICTE & Affiliated to JNTUH

Accredited by NBA and NAAC with 'A' Grade

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VNR VIGNANA JYOTHI INSTITUTE OF ENGINEERING AND TECHNOLOGY
HYDERABAD
An Autonomous Institute
Approved by AICTE & Affiliated to JNTUH
Accredited by NBA and NAAC with 'A' Grade

ACADEMIC REGULATIONS FOR B.TECH. DEGREE COURSE

(Applicable for Students admitted from the academic year 2013-2014)

1. 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 and Electronics Engineering
03	Mechanical Engineering
04	Electronics and Communication Engineering
05	Computer Science and Engineering.
10	Electronics and Instrumentation Engineering
12	Information Technology
24	Automobile Engineering

1.1 Eligibility Criteria for Admission

- The eligibility criteria for admission into engineering programmes shall be as mentioned below:
- The candidate shall be an Indian National / NRI
- The candidate should have completed 16 years of age as on 31st December of the academic year for which the admissions are being conducted.
- The Candidate should have passed the qualifying examination (10+2) or equivalent as on the date of admission

1.1 .1 Seats in each programme in the Institution are classified into **Category A** and **Category B** as per the G.Os.

a) Category – A Seats

These seats will be filled through counseling as per the rank at the Common Entrance Test (EAMCET) conducted by the State Government and as per other admission criteria laid down in the G.Os.

1.1.2 Category - B Seats

These seats will be filled by the institute as per the G.Os Issued by State Government from time to time.

1.1.3 Category: Lateral Entry

The candidate shall be admitted into the Third Semester, (2^{nd} year, I^{st} Semester) based on the rank secured by the candidate at Engineering Common Entrance Test (ECET (FDH)) by the Convener, ECET.

2. Distribution and Weightage of Marks

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

ii. For theory subjects the distribution shall be **30 marks for Mid Semester Evaluation** and **70 marks for the End Semester Examination**.

For theory subjects, two mid examinations will be conducted in each Semester as per the academic calendar. Each mid examination is evaluated for 25 marks.

For the Mid-Examination the Distribution of Marks (25 Marks) as follows

Part-A: - 4 Marks (4X1 Marks) Compulsory

6 Marks (3X2 Marks) Compulsory

Part-B:- 15 Marks (3X5 Marks) 3 out of 4 Questions

Assignment Test/Assignment: - Two assignments are to be given to students covering the syllabus of First Mid and Second Mid Examinations respectively and are evaluated for 5 marks each.

The first assignment shall be submitted after first mid examinations and second Assignment should be submitted after second mid examination. At the end of the Semester, Internal Marks (Maximum 30) for the respective subject is assigned as follows:

(a) 25 marks: 80% from the best performed mid examination and 20% from the other mid examination.

(b) 5 marks: Average of the two assignments/assignment tests

iii. For practical subjects there shall be a continuous evaluation during the Semester for 30 **marks and 70 marks for end examination**. Out of the 30 marks, **day-to-day work in the laboratory shall be evaluated for 10 marks**, and 10 marks for practical examination and 10 marks for laboratory record.

NOTE: A. Student who is absent for any assignment/Mid-term 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.

B. If any student absent for mid exam due to Medical/Acute illness same may be reported in advance to Head of the Department in writing with a request to reconduct the mid-term examination. The committee consisting of HOD/Dean-Academics/Dean-Examinations will take the final decision on the conduct of mid-term examination.

iv For the subjects having design and / or drawing, (such as Engineering Graphics, Engineering Drawing, Machine Drawing, Production Drawing Practice, and Estimation etc.,) the distribution shall be 30 **marks for internal evaluation (15 marks for day-to-day work and 15 marks for Mid examination (**the average of the two examinations will be taken into account**) and 70 marks for end semester examination.**

V There shall be an **industry-oriented mini-Project**, in collaboration with an industry of their specialization, to be taken up during the summer vacation after III year II Semester examination. The **industry oriented mini project shall be evaluated during the IV year I Semester.** The industry oriented mini project shall be submitted in report form and should be presented before a committee, which shall be evaluated for **100 marks.** The committee consists of Head of the Department, the supervisor of mini project and a senior faculty member of the department. There shall be **no mid-term assessment for industry oriented mini project. However, attending the shadow engineering program is a pre – requisite for evaluating industry – oriented mini project**. Students should submit a report on learning outcomes of the shadow engineering and Engineer in Mirror. Every student should attend shadow engineering and Engineer in Mirror programme in an industry for not more than a week days during second year and third year respectively.

vi. There shall be a **Seminar presentation in IV year II Semester**. For the Seminar, the student shall collect the information on a specialized topic other than the project topic and prepare a technical report, showing his understanding of the topic, and submit to the department, which shall be evaluated by a Departmental committee consisting of the Head of the department, Seminar supervisor and a senior faculty member. **The seminar will be evaluated for 100 marks based on the report and presentation made.**

vii. There shall be a **Comprehensive Viva-Voce in IV year II 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 **after submitting M.T.P record in complete**. The Comprehensive Viva-Voce is aimed to assess the student's understanding in various subjects studied during the B.Tech course of study. The Comprehensive Viva-Voce is evaluated **for 100 marks** by the Committee. There will be **no Midterm assessment for the Comprehensive viva-voce.**

viii. The Project work shall be started by the student in the beginning of the IV year I Semester. Out of a total of **200 marks** for the project work, **60 marks shall be for Midterm Evaluation** and **140 marks for the Semester end Examination**. The viva-voce shall be conducted by a committee comprising of an external examiner, Head of the Department and the project supervisor and one senior faculty. The evaluation of project work shall be conducted at the end of the IV year II Semester. **The Midterm Evaluation shall be on the basis of three Seminars conducted during the IV year II Semester for 30 marks by the committee consisting of Head of the Department, project supervisor and senior faculty member of the Department and for 30 marks by the supervisor of the project.**

3. Semester end Examination

(a) Theory Courses

Each course is evaluated for 70 marks. Examination is of 3 hours duration. Question Paper Pattern is as follows

Part A:- 30 Marks Compulsory

5X1Marks (One question from each unit)

5X2Marks (One question from each unit)

5X3Marks (One question from each unit)

Part B:- 40 Marks (4 out of 6 questions) (At least one question from each unit)

(b) Practical Courses

Each lab course is evaluated for 70 marks. The examination shall be conducted by the laboratory teacher and another senior teacher concerned with the subject of the same/other department/Industry. One of examiner will be appointed by the Controller of Examinations in consultation with HOD as and when required and is evaluated as per standard format.

(c) Supplementary Examinations

Supplementary Examinations will be conducted for the current semester after the declaration of the results of the regular examination of that semester.

4. Attendance Requirements

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

ii. Condonation of shortage of attendance in aggregate **up to 10% (65% and above and below 75%)** in a semester may be granted by **Institute Academic Committee.**

iii. 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. He may seek re-admission for that Semester when offered next.

iv. Shortage of Attendance **below 65% in aggregate** shall in **NO case be condoned.**

v. Students whose shortage of attendance is not condoned / not paid the stipulated fee in any Semester are not eligible to take their end semester examination of that Semester.

5. Minimum Academic Requirements

The following academic requirements have to be satisfied in addition to the attendance requirements mentioned in item No.**4.**

i. A student shall be deemed to have satisfied the minimum academic requirements and earned the credits allotted to each theory or practical design or drawing subject or project, if he secures **not less than 35% (25 out of 70 marks)** of **marks in the end examination and a minimum of 40% of marks in the sum total of the Midterm evaluation and end semester examination taken together.**

ii. A student shall be **promoted from II to III year** only if he fulfills the academic requirement of getting **50 credits from the examinations held upto II Year II Semester including Supplementary examinations of II B.Tech II Semester.**

iii. A student shall be **promoted from III year to IV year** only if he fulfills the academic requirement of getting a total of **75 credits from the examinations held upto III Year II Semester including Supplementary examinations of III B.Tech II Semester .**

Iv. **A** student shall register and put up minimum academic requirement in all 200 credits and earn atleast 192 credits. Marks obtained in these credits shall be considered for the calculation of Cumulative Grade Point Average **(CGPA) and percentage of marks**.

v. The student should obtain two certificate courses during his/her course of study

vi. Students who fail to earn atleast 192 credits as indicated in the course structure **within eight academic years** from the year of their admission shall **forfeit their seat** in B.Tech. Course and their **admission stand Cancelled.**

6. Course pattern

i. The entire course of study is of four academic years. **All I, II, III and IV years are of Semester pattern.**

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

iii. When a student is detained due to shortage of attendance in any Semester, he may be re-admitted into that Semester when it is offered next, **with the academic regulations of the batch into which he gets readmitted.**

iv. When a student is detained due to lack of credits in any year, he may be eligible for promotion to the next year after obtaining required number of credits and fulfillment of the academic requirements.

Award of B.Tech. Degree and Class

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

i) Pursued **a course of study for not less than four academic years and not more than eight academic years.**

ii) Registered for **200 credits** and secured a minimum of **192 credits with compulsory subjects as listed in Table.**

Table: Compulsory Subjects

Serial Number	Subject Particulars
1.	All Practical Subjects
2.	Industry oriented mini project
3.	Comprehensive Viva-Voce
4.	Seminar
5.	Project work

iii) The student should obtain two certificate courses during his/her course of study

NOTE: Students, who fail to fulfill all the academic requirements for the award of the degree within eight academic years from the year of their admission, shall forfeit their seat in B.Tech. Course.

7. CGPA System:

Method of awarding absolute grades and grade points:

The **absolute grading method** is followed, based on the total marks obtained in internal and external examinations. Grades and grade points are assigned as per the Table given below

B.Tech Program: The Absolute Grading Method is followed, based on the total marks obtained in internal and external examinations. Grades and Grade points are assigned as given below

Marks Obtained	Grade	Description of Grade	Grade Points(GP) Value Per Credit
>=90	O	Outstanding	10.00
>=80 and <89.99	A+	Excellent	9.00
>=70 and <79.99	A	Very Good	8.00
>=60 and <69.99	B	Good	7.00
>=50 and <59.99	C	Fair	6.00
>=40 and <49.99	D	Pass	5.00
<40	F	Remedial	
Not Appeared the Exam(s)	N	Absent	

The student is eligible for the award of the B.Tech degree with the class as mentioned in the Table.

CGPA	CLASS
>= 7.5	First Class with Distinction
>= 6.5 and <7.5	First class
>= 5.5 and < 6.5	Second Class
>=5.0 and < 5.5	Pass class

Calculation of Semester Grade Points Average (SGPA):

The performance of each student at the end of the each semester is indicated in terms of SGPA. The SGPA is calculated as below:

$$SGPA = \frac{Total\ Earned\ Weighted\ Grade\ Points\ for\ that\ Semester}{Total\ Credits\ for\ the\ Semester}$$

$$SGPA = \frac{\sum_{i=1}^{P} Ci * Gi}{\sum_{i=1}^{P} Ci}$$

Where 'Ci' = Number of Credits allotted to particular subject 'I'

'Gi' = Grade Point corresponding to the letter grade awarded in that subject 'i"

'i"= 1,2,…..P represent the number of subjects for that particular semester

* **SGPA is calculated and awarded for the candidates who pass all the courses in a semester.**

Calculation of Cumulative Grade Point Average (CGPA) for Entire Programme. The CGPA is calculated as below:

Assessment of the overall performance of a student is obtained by calculating Cumulative Grade Point Average (CGPA), which is weighted average of the grade points obtained in all subjects during the course of study.

$$CGPA = \frac{\sum_{i=1}^{m} Ci * Gi}{\sum_{i=1}^{m} Ci}$$

Where Ci= Number of credits allotted to a particular subject 'I"

Gi = Grade Point corresponding to the letter grade awarded in that subject 'i"

I= 1,2,….m represent the number of subjects of the entire program.

Grade lower than D in any subject is not considered for CGPA calculation. The CGPA is awarded only when the student acquires the required number of credits prescribed for the program.

Grade Card

The grade card issued shall contain the following:

a) The credits for each subject offered in that semester

b) The letter grade and grade point awarded in each subject

c) The **SGPA/CGPA**

d) Total number of credits earned by the student up to the end of that semester.

e) Award list indicating the marks awarded to the student.

8. 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. The award or issue of the Degree may also be withheld in such cases.

9. **Transitory Regulations**

Students who have discontinued or have been detained for want of attendance or any other academic requirements, may be considered for readmission as and when they become eligible. They have to take up Equivalent subjects, as substitute subject in place of repetition of subjects as decided by the BoS chairman of the respective department. He/She will be admitted under the regulation of the batch in which he/she is readmitted.

10. Minimum Instruction Days

The minimum instruction days for each Semester shall be **90 instruction days.**

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

12. 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 transfer of students from other college or from this institute is to approved by the Governing Council.

13. 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 Principal shall be final.

iv. The Chairmen Academic Council 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.

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

(Applicable for students admitted from the academic year 2013-2014)

(i) Registered for 150 credits and secured a minimum of 142 credits with compulsory subjects as listed in table.

Table: Compulsory Subjects

Serial Number	Subject Particulars
1.	All Practical Subjects
2.	Industry oriented mini project
3.	Comprehensive Viva-Voce
4.	Seminar
5.	Project work

(ii) A student who fails to earn a minimum of 142 credits as indicated in the course structure within **six** academic years from the year of their admission shall forfeit their seat in B.Tech. programme and their admission stands cancelled.

(iii) The same attendance regulations are adopted as that of B.Tech. Four year degree course.

(iv) A student shall be promoted from Third year to Fourth year only on fulfilling the academic requirements of securing 50 credits from the examinations held upto III B.Tech II Semester including Supplementary Examinations.

(v) All other regulations as applicable to B.Tech. four year degree course will hold good for B.Tech. (Lateral Entry Scheme).

15. Malpractice Rules

Disciplinary Action for Malpractices/Improper Conduct in Examinations

	Nature of Malpractices/Improper conduct	**Punishment**
	If the candidate:	
1.	(a) Possesses or keeps accessible in examination hall, any paper, note book, programmable calculators, Cell phones, pager, palm computers or any other form of material concerned with or related to the subject of the examination (theory or practical) in which he is appearing but has not made use of (material shall include any marks on the body of the candidate which can be used as an aid in the subject of the examination)	Expulsion from the examination hall and cancellation of the performance in that subject only.
	(b)Gives assistance or guidance or receives it from any other candidate orally or by any other body language methods or communicates through cell phones with any candidate or persons in or outside the exam hall in respect of any matter.	Expulsion from the examination hall and cancellation of the performance in that subject only of all the candidates involved. In case of an outsider, he will be handed over to the police and a case is registered against him.
2.	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	Cancellation of the performance in that subject.

	letters to the examiners or writes to the examiner requesting him to award pass marks.	
6.	Refuses to obey the orders of the Chief Superintendent/Assistant – Superintendent / any officer on duty or misbehaves or creates disturbance of any kind in and around the examination hall or organizes a walk out or instigates others to walk out, or threatens the officer-in charge or any person on duty in or outside the examination hall of any injury to his person or to any of his relations whether by words, either spoken or written or by signs or by visible representation, assaults the officer-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 end semester

		examinations including supplementary 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 and cancellation of the performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester/year. The candidate is also debarred and forfeits the seat. Person(s) who do not belong to the College will be handed over to police and, a police case will be registered against them.
10.	Comes in a drunken condition to the examination hall.	Expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate has already appeared including

		practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester/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 academic council of the Institute 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 the 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 in correct 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 enquire.
4) Based on the explanation and recommendation of the committee action may be initiated.

5) Malpractice committee:

i.	Principal	Chairman
ii.	Controller of Examinations	Convener
iii.	Invigilator	Member
iv.	Chief Examiner of the subject/subject expert	Member
v.	Concerned Heads of the Department	Member

B.Tech (COMPUTER SCIENCE AND ENGINEERING)

Program Educational Objectives and Program Outcomes

Program Educational Objectives (PEOs)

1. Our graduates will apply basic principles and practices of computing grounded in mathematics, science and basic engineering to successfully complete hardware and/or software related engineering projects to meet customer business objectives.
2. Our graduates will be prepared for graduate studies, R&D, consultancy and / or engage in Higher education.
3. Our graduates will communicate effectively, recognize and incorporate societal needs and constraints in their professional endeavors, and practice their profession with high regard to social, legal and ethical responsibilities.
4. Our graduates will promote design, research, and implement products and services in the field of Computer Science & Engineering through strong communication, leadership, and entrepreneurial skills
5. Our graduates will remain informed and involved as full participants in our profession and our society.

Program Outcomes (POs)

Students in the Computer Science & Engineering program should, at the time of their graduation, be in possession of:

1. an ability to apply knowledge of mathematics, probability & statistics, computer science, and engineering as it applies to the fields of computer software and hardware,
2. an ability to design and conduct experiments, as well as to organize, analyze, and interpret data,
3. an ability to design and construct a hardware and software system, component, or process to meet desired needs, within realistic constraints such as economic, environmental, social, political, ethical, health & safety, manufacturability, and sustainability,
4. an ability to function effectively on multidisciplinary teams to accomplish a common goal,
5. an ability to identify, formulate, and solve hardware and software problems using sound computer engineering principles,
6. an understanding of professional, legal, and ethical issues and responsibilities as it pertains to computer science & engineering,
7. an ability to effectively communicate technical information in speech, presentation, and in writing,

8. the broad education necessary to understand and analyze the local and global impact of computing on individuals, organizations, and society,
9. a recognition of the need for an ability to engage in lifelong learning and in continuing professional development,
10. a knowledge of contemporary issues, and
11. an ability to use the techniques, skills, and modern hardware and software tools necessary for computer engineering practice.
12. Demonstrate knowledge and understanding of engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

VNR Vignana Jyothi Institute of Engineering & Technology
B. TECH Computer Science and Engineering
(R13)

I YEAR I SEMESTER **COURSE STRUCTURE**

Subject Code	Subject Name	Lectures	T/P/D	Credits
13MTH001	Advanced Calculus	3	1	3
13PHY001	Engineering Physics	3	1	3
13CHE001	Engineering Chemistry	3	0	3
13ENG001	English	3	0	3
13CSE001	Computer Programming	4	0	4
13CED004	Environmental Studies	3	0	3
13MED103	IT & Engineering Workshop	0	3	2
13CSE101	Computer Programming Laboratory	0	3	2
13EPC101	Engineering Physics & Engineering Chemistry Laboratory	0	3	2
Total		**19**	**11**	**25**

VNR Vignana Jyothi Institute of Engineering & Technology
B. TECH Computer Science and Engineering
(R13)

I YEAR II SEMESTER **COURSE STRUCTURE**

Subject Code	Subject Name	Lectures	T/P/D	Credits
13MTH002	Linear Algebra & Ordinary Differential Equations	3	1	3
13MTH003	Numerical Analysis and Linear Programming	3	1	3
13PHY004	Applied Physics	3	0	3
13CSE032	Code of Ethics	4	0	4
13ITD002	Data Structures	4	0	4
13MED176	Engineering Drawing	2	4	4
13ITD102	Data Structures Laboratory	0	3	2
13ENG101	English Language Communications Skills Laboratory	0	3	2
Total		**19**	**12**	**25**

*** T/P/D: Tutorial/Practical/Drawing Practice**

VNR Vignana Jyothi Institute of Engineering & Technology
B. TECH Computer Science and Engineering

II YEAR I SEMESTER **COURSE STRUCTURE**

Subject Code	Subject Name	Lectures	T/P/D	Credits
13MTH007	Probability Statistics and Queuing Theory	3	1	3
13EEE078	Elements of Electrical & Electronics Engineering	3	1	3
13ITD003	Advanced Data Structures through C++	3	1	3
13CSE002	Mathematical Foundations for Computer Science	3	1	3
13CMS001	Business Economics and Financial Analysis	4	0	4
13CSE003	Digital Logic Design	3	1	3
13EEE178	Elements of Electrical and Electronics Engineering lab	0	3	2
13CSE102	Digital Logic Design Lab	0	3	2
13ITD103	Advanced Data Structures through C++ Lab	0	3	2
Total		**19**	**14**	**25**

VNR Vignana Jyothi Institute of Engineering & Technology

B. TECH Computer Science and Engineering

II YEAR II SEMESTER **COURSE STRUCTURE**

Subject Code	Subject Name	Lectures	T/P/D	Credits
13CSE004	Formal Languages and Automata Theory	4	0	4
13CSE005	Data Base Management Systems	3	1	3
13ITD004	Computer Organization	3	1	3
13CSE006	Design and Analysis of Algorithms	3	1	3
13CSE007	Software Engineering	3	1	3
13ITD005	Java Programming	3	1	3
13CSE103	Data Base Management Systems Laboratory	0	3	2
13CSE104	Design and Analysis of Algorithms Laboratory	0	3	2
13ITD104	Java Programming Laboratory	0	3	2
Total		**19**	**14**	**25**

*** T/P/D: Tutorial/Practical/Drawing Practice**

VNR Vignana Jyothi Institute of Engineering & Technology
B. TECH Computer Science Engineering

III YEAR I SEMESTER **COURSE STRUCTURE**

Subject Code	Subject Name	Lectures	T/P/D	Credits
13ITD008	Operating Systems	3	1	3
13CSE008	Object Oriented Analysis and Design	3	1	3
13ITD006	Computer Networks	4	0	4
13CSE009	Compiler Design	3	1	3
13CSE010	Principles of Programming Languages	3	1	3
13CSE014	Artificial Intelligence & Neural Networks	3	1	3
13ENG102	Advanced English Language Communications Skills Laboratory	0	3	2
13CSE105	Operating Systems & Computer Networks Lab	0	3	2
13CSE106	Compiler Design & OOAD Laboratory	0	3	2
Total		**19**	**14**	**25**

*** T/P/D: Tutorial/Practical/Drawing Practice**

VNR Vignana Jyothi Institute of Engineering & Technology

B. TECH Computer Science Engineering

III YEAR II SEMESTER

COURSE STRUCTURE

Subject Code	Subject Name	Lectures	T/P/D	Credits
13ECE084	Microprocessors and Interfacing	4	0	4
13CSE013	Cryptography & Network Security	3	1	3
13ITD019	Mobile Computing	3	1	3
13CSE015	Computer Graphics and Animation	3	1	3
13ITD010	LINUX Programming	3	1	3
Open Elective				
13CED037	Disaster Management	3	0	3
13ITD011	Green IT			
13EEE015	Renewable Energy Sources			
13CSE016	Intellectual Property Rights			
13AED010	Modern Automobile Technologies			
13CSE107	Computer Graphics and Animation Laboratory	0	3	2
13CSE112	LINUX Programming Laboratory	0	3	2
13ECE178	Microprocessors and Interfacing Laboratory	0	3	2
Total		**19**	**13**	**25**

*** T/P/D: Tutorial/Practical/Drawing Practice**

VNR Vignana Jyothi Institute of Engineering & Technology
B. TECH Computer Science Engineering

IV YEAR I SEMESTER **COURSE STRUCTURE**

Subject Code	Subject Name	Lectures	T/P/D	Credits
13ITD012	Web Technologies	4	0	4
13CSE017	Data Warehousing and Mining	3	1	3
13CMS002	Management Science	4	0	4
Elective – I				
13ITD079	Mobile Application Development	3	0	3
13CSE031	Scripting Languages			
13CSE018	Gaming Engineering			
13CSE012	Cyber Security			
13ECE013	Digital Image Processing			
Elective – II				
13CSE011	Advanced Computer Architecture	3	0	3
13CSE020	Building Enterprise Applications			
13CSE029	Advanced Databases			
13ITD021	Cloud Computing			
13ECE081	VLSI System Design			

13CSE108	Data Warehousing and Mining Laboratory	0	3	2
13ITD108	Web Technologies Laboratory	0	3	2
*13ITD107	Mobile Application Development Laboratory	0	3	2
*13CSE111	Scripting Language Laboratory			
*13CSE109	Gaming Engineering Laboratory			
*13CSE110	Cyber Security Laboratory			
*13ECE110	Digital Image Processing Laboratory			
13CSE201	Industry Oriented Mini Project	0	4	2
Total		**17**	**14**	**25**

*** T/P/D: Tutorial/Practical/Drawing Practice**

***The labs will be offered only corresponding to the electives offered.**

VNR Vignana Jyothi Institute of Engineering & Technology
B. TECH Computer Science Engineering

IV YEAR II SEMESTER **COURSE STRUCTURE**

Subject Code	Subject Name	Lectures	T/P/D	Credits
13CSE022	Software Project Management	3	0	3
Elective -III				
13CSE023	Semantic Web and Social Networks	3	0	3
13ITD020	Information Retrieval Systems			
13ITD078	Human Computer Interaction			
13CSE025	Bio – Informatics			
13ITD009	Software Testing Methodologies			
Elective - IV				
13CSE021	Advanced Business Analytics	3	0	3
13ITD016	Computer Forensics			
13CSE026	Design Patterns			
13CSE027	Multi Core Technologies			
13CSE033	Software Metrics			
13CSE203	Technical Seminar	0	3	2
13CSE204	Comprehensive Viva-Voce	0	0	2
13CSE202	Project Work	0	18	12
Total		**9**	**21**	**25**

*** T/P/D: Tutorial/Practical/Drawing Practice**

VNR Vignana Jyothi Institute of Engineering & Technology

I Year B.Tech CSE – I Sem	**L**	**T/P/D**	**C**
	3	**1**	**3**

(13MTH001)ADVANCED CALCULUS

Course Objectives:

1. Understand Taylor's theorem and its application to maxima and minima of f(x,y)
2. Understand the process of curve sketching
3. Understand multiple integrals and its applications
4. Apply the integral theorems of vector calculus.

Course Outcomes:

Upon completion of the course, the students are expected to:

1. Solve problems involving the maxima and minima of f(x,y).
2. Apply the curve tracing concepts to find arc length of curves, surface area, volume of solids of revolution.
3. Evaluate the multiple integrals using appropriate change of variables.
4. Verify the integral theorems.

UNIT I

CALCULUS OF ONE AND SEVERAL REAL VARIABLES

Mean value theorems **–** Rolle's Theorems, Lagrange's Mean value theorem Cauchy's Mean value theorem **,** Taylor's expansion and McLaurin's expansion of functions (without proofs).

Partial differentiation, partial derivatives of first and second order in terms of partial derivatives, Jacobian, Euler's theorem on homogeneous functions, change of variables, Taylor's theorem of two variables(without proof) and its application. Maxima and Minima of two variables, Langrange's method of undetermined multipliers.

UNIT II

CURVE TRACING AND RELATED APPLICATIONS

Curvature of curves in Cartesian, parametric and polar coordinates. Tracing of curves in Cartesian, parametric and polar coordinates (like conics, astroid, hypocycloid, Folium of Descartes, Cycloid, Circle, Cardiode, Lemniscate). Applications -finding area under the curves, Length of the curves, volume and surface area of solids of revolution

UNIT III

MULTIPLE INTEGRALS

Introduction of Multiple integrals , evaluation of double and triple integrals, change of order of integration change of variables , Cylindrical and Spherical polar coordinates. Application to evaluation of plane areas, volumes and surface areas of solids of revolution.

UNIT IV

VECTOR DIFFERENTIAL CALCULUS

Scalar and Vector point functions, Gradient, Divergence, Curl with geometrical & physical interpretation, Directional derivatives, Properties.

UNIT V

VECTOR INTEGRAL CALCULUS

Line integrals and application to Work done and Circulation, Scalar potential function, Surface integrals and Volume integrals, Gauss divergence theorem, Green's theorem , Stokes' theorem (theorems without proof).

TEXT BOOKS:

1. Higher Engineering Mathematics – by B. S. Grewal,Khanna publishers
2. Calculus and Analytic Geometry by Thomas and Finney, 9th edition; Publisher: Pearson Education.

REFERENCES :

1. Elementary Analysis: The Theory of Calculus by Kenneth Ross; Publisher: Springer
2. Advanced Engineering Mathematics by Erwin Kreyszig, 8th edition; Publisher: John Wiley.
3. Advanced Engineering Mathematics by Peter 'O' Neil, publisher: Cengage Learning
4. Advanced Engineering Mathematics by R.K.Jain and S.R.K.Iyengar; Narosa Publications

VNR Vignana Jyothi Institute of Engineering & Technology

I Year B.Tech CSE – I Sem	**L**	**T/P/D**	**C**
	3	**1**	**3**

(13PHY001)ENGINEERING PHYSICS

Course Objectives:

1. To supplement and enhance the basic concepts in Physics essentially required in the study of materials as well as interaction of light with matter, interaction of light with matter through physical phenomena like interference, diffraction and polarization.
2. To know and understand some important applications of lasers and optical fibers.
3. To learn the importance of wave and particle nature of light and to understand the behavior of an electron in one dimensional potential box.
4. To understand the effect of temperature on Fermi Dirac Distribution Function and also learn the behavior of an electron in a periodic potential, the new concept of Effective mass of an electron and to know the classification of materials into conductors, semiconductors and insulators.

Course Outcomes:

After completion of the course, the students will be able to:

1. Understand the Phenomenon of Interference, Diffraction& Polarization.
2. Learn the principle, working, construction and energy mechanism of various lasers and their applications Explain the light signal propagation and attenuation through optical fiber.
3. Understand the differences between particle and wave nature, energy states in one dimensional potential box and also the Consequences of Heisenberg's Uncertainty principle.
4. Understand the one dimensional Schrodinger's wave equation and the effect of temperature on Fermi-Dirac Distribution, Kronig Penny model.

UNIT –1:

INTERFERENCE:

Superposition principle, resultant amplitude, coherence, methods to obtain coherent sources, interference, Young's double slit experiment, interference in thin films by reflection, Newton's rings Experiment.

DIFFRACTION-I:

Distinguish between Fraunhofer and Fresnel diffraction, diffraction at single slit (Qualitative and Quantitative (Phasors approach)).

UNIT -2

DIFFRACTION-II

Diffraction at double slit, circular aperture, and multiple slits (grating)(Qualitative Approach), Resolution of spectral lines, Rayleigh criterion, and resolving power of grating.

POLARIZATION

Polarization phenomenon, Brewster's Law and Malus law, examples, types of polarization, double refraction, Nicol prism, Quarter and Half wave plates.

UNIT -3:

LASERS:

Characteristics of Lasers – Spontaneous and Stimulated Emission of radiation, meta stable state, population inversion, lasing action, Einstein's coefficients and relation between them — Ruby Laser – Helium-Neon Laser –Semiconductor Laser – Applications of lasers.

FIBER OPTICS:

Principle of optical fiber and properties – Acceptance angle and acceptance cone – Numerical aperture –Types of fibers and refractive index profiles – Qualitative analysis of attenuation in optical fibers –Application of optical fibers.

UNIT -4:

ELEMENTS OF STATISTICAL MECHANICS:

Maxwell-Boltzmann, Bose-Einstein and Fermi-Dirac statistics (non-mathematical treatment); Photon gas, Planck's law of black body radiation; Deduction of Wien's law and Rayleigh-Jeans law from Plank's law.

PRINCIPLES OF QUANTUM MECHANICS:

Waves and particles – De Broglie hypothesis - Matter waves - Davisson and Germer experiment –Heisenberg's uncertainty principle - Schrodinger Wave Equation – Wave function and its Physical Significance - Particle in one dimensional potential box(wave functions, probability densities and energy states).

UNIT -5

FREE ELECTRON FERMI GAS:

Energy levels in one dimension, Effect of temperature on the Fermi-Dirac distribution, Free electron gas in three dimensions, electrical conductivity & Ohm's law, Electrical Resistivity of Metals (Qualitative).

BAND THEORY OF SOLIDS:

Electron in a periodic potential; Bloch Theorem; Kronig-Penney model (non-mathematical treatment); Origin of energy band formation in solids; Classification of materials into conductors, semiconductors & Insulators; and Concept of effective mass of an electron.

TEXT BOOKS:

1. Physics vol.2, by Halliday, Resnick and Krane; John Wiley & Sons
2. Concepts of Modern physics by Arthur Beiser, McGraw Hill Inc.
3. Introduction to Solid State Physics by Charles Kittel : John Wiley & Sons

REFERENCE BOOKS:

1. Engineering Physics by R.K.Gaur and S.L.Gupta; Dhanpat Rai and Sons
2. Applied Physics by P.K.Mittal, IK International Publishing House (P) Ltd.
3. Optics by Ghatak and Thyagarajan, Tata Mc Graw
4. Engineering Physics by G Sahashra Buddhe; University Press
5. Elements of Solid State Physics by J.P.Srivatsva, PHI Publishers.
6. Introduction to Optical Communication by G. Keiser
7. Quantum Mechanics by Gupta Kumar Sharma

VNR Vignana Jyothi Institute of Engineering & Technology

I Year B.Tech CSE – I Sem	**L**	**T/P/D**	**C**
	3	**0**	**3**

(13CHE001) ENGINEERING CHEMISTRY

Course Prerequisites: General Chemistry

Course Objectives:

1. Understand electrochemistry which deals with the utilization of electrical energy of an external source for bringing about a physical or chemical change.
2. Knowledge of "Corrosion engineering education" and Usage of polymers in modern world as an integral part of every human's life.
3. Knowledge of purification techniques and various applications of soft water in industries.
4. Usage of nanomaterial's as emerging scientific components with amazing potential applications in various fields.

Course Outcomes:

After completion of the course, the students will be able to:

1. Visualize the chemical applications of electricity.
2. Prevention of corrosion of metals and applications of polymers from domestic articles to sophisticated scientific and medical instruments.
3. Benefits of treated water as source in steam generation and other fields like production of steel, paper, textiles, atomic energy etc.
4. The applicability and greater efficiency of using a material at nanoscale in different engineering fields.

UNIT I Electrochemical cells and batteries

Conductance-factors effecting conductance, conductometric titrations; cells: types of cells, cell representation, electrode potential; Standard electrode potential; Electrochemical series; Nernst equation; Reference electrodes – hydrogen, calomel electrode; Ion selective electrodes (glass electrode & flouride electrode); Numerical problems.

Batteries

Primary and secondary cells (lead-acid cell; Ni-Cd cell; lithium cells); Applications of batteries; Fuel cells – methanol – oxygen fuel cells, advantages of fuel cells; Solar cells - principle, and applications.

UNIT II Corrosion and its control

Introduction; Causes and effects of corrosion; Different types of corrosion; Theories of corrosion – chemical, electrochemical corrosion (reactions); Factors affecting corrosion – nature of metal (galvanic series; over voltage; purity of metal; nature of oxide film; nature of corrosion product), and nature of environment (effect of temperature; effect

of pH; humidity; effect of oxidant).Corrosion control methods – cathodic protection, sacrificial anode, and impressed current cathode; Surface coatings – methods of application on metals (hot dipping; galvanizing; tinning; cladding; electroplating), and organic surface coatings (paints - constituents and functions).

UNIT III a) Polymers

Introduction**;** Types of polymerization; Plastics - thermoplastic resins, and thermoset resins; Compounding & fabrication of plastics; Preparation, properties, and engineering applications of polyethylene, PVC, PS, Teflon, bakelite, nylon.

III b) Rubber

Natural rubber- processing, vulcanization; Elastomers (Buna-s; Butyl rubber; Thiokol rubbers); Fiber reinforced plastics (FRP) and their applications.

UNIT IV Water

Introduction; Hardness - causes, expression of hardness, units, types of hardness, estimation of temporary & permanent hardness of water, and numerical problems; Boiler troubles – scale & sludge formation, caustic embrittlement, corrosion, priming & foaming; Softening of water (Internal & external treatment - lime soda, zeolite, ion exchange process, and numerical problems); Reverse osmosis and Electro dialysis (desalination processes).

UNIT V Nanomaterials

Introduction; Preparation and applications of nanomaterials with special reference to carbon nanotubes.

Insulators

Classification of insulators; characteristics of thermal & electrical insulators and their applications; Superconductors - $YBa_2 Cu_3 O_{7-x}$; Applications of superconductors.

TEXT BOOKS

1. Text Book of Engineering Chemistry by Y.Bharathi Kumari, Jyotsna Cherukuri; Publisher: VGS Book Links.
2. Engineering Chemistry by P.C.Jain & Monica Jain, Publisher: Dhanpatrai Publishing Company.

REFERENCES

1. Text Book of Engineering Chemistry by S.S. Dhara & Mukkanti; Publisher: S.Chand & Co.
2. Engineering Chemistry by O. G. Palanna
3. Text Book of Engineering Chemistry by R.Gopalan, D.Venkappayya, Sulochana Nagarajan; Vikas Publishers.
4. Engineering Chemistry by R.P.Mani, S.N. Mishra, B.Rama Devi ,Cengage Learning Publications.

VNR Vignana Jyothi Institute of Engineering & Technology

I Year B.Tech CSE – I Sem	**L**	**T/P/D**	**C**
	3	**0**	**3**

(13ENG001) ENGLISH

Introduction

This is the age of information and communication technologies. Engineers and technical professionals need to convey technical information in English for various purposes. Besides learning general English as an international language, engineering students need to be equipped with adequate writing ability so that they can communicate technical information clearly on at least a basic level. A good English writing proficiency can be a contributing factor to professional recognition and career prospects. This course teaches those writing strategies that scientists, engineers, and others will need in order to write successfully on the job. It initiates the students into Technical Writing. The purposes of technical writing are to inform and persuade. This program aims to train students in writing clear, concise and effective English. This Syllabus is therefore, a Pragmatic English Writing Program for engineering students with intermediate proficiency. The program covers a syllabus outline and instructional approaches on basic writing skills with particular reference to technical writing.

Course Objectives:

1. To equip the students with all the LSRW skills for advanced writing and speaking.
2. To equip the students with basic grammar, infrastructural patterns and grammatical constructions required in technical writing as well as oral presentation
3. To acquaint the students with the writing process in preparation for academic and workplace writing.

Course Outcomes:

1. Comprehend technical writing produced in the engineering profession
2. Understand the writing process and create logical paragraphs
3. Use infrastructural patterns in writing and speaking

Methodology

A Task-based, process oriented methodology will be used by the teachers to give a practical orientation to the teaching of language. An inductive approach will be used to demonstrate the use of language in context. This should enable the students to internalize the language structures and vocabulary used in context. Students will be exposed to numerous examples and ample practice will be given in the contextual use of language structures.

Syllabus Outline

Unit I : Review of Grammar

i) Common Errors
ii) Subject-Verb Agreement
iii) Adverbs
iv) Transitional elements
v) Use of Articles and Prepositions
vi) Conjunctions
vii) pronoun reference

Unit II : Prose 1

1. Heaven's Gate by Pico Iyer
2. The Connoisseur by Nergis Dalal

Unit III Reading and Writing Skills

i) Reading Comprehension -- Skimming & Scanning
ii) Reading Comprehension -- Intensive Reading
iii) Reading Comprehension -- Critical Analysis
iv) Paragraph Writing
v) Letter Writing
vi) Memo Writing

Unit IV : Prose 2

1. The Cuddalore Experience by Anu George
2. The Odds Against Us by Satyajit Ray

Unit V : Advanced Writing Skills

1. Comparison and Contrast Pattern
2. Cause and Effect Pattern
3. Classification
4. Analogy
5. Problem-Solution Pattern

Prescribed Text Books

1. **Enjoying Everyday English** by A. Ramakrishna Rao
2. **Effective Technical Communication** by Ashraf Rizvi
3. **Technical Writing Process and Product** by Gerson Sharon J. and Steven Gerson. 3rd edition, New Jersey: Prentice Hall 1999

References

1. M. Raman and S. Sharma, 2004; Technical Communication : Principles and Practices, OUP, (Indian Edition)
2. Blanton, L.L. 1993; Composition Practice, Book 4 ,Second Edition, Heinle & Heinle Publishers, pp. 54
3. Georges, T.M. 1996; A course in Analytical Writing for Science and Technology, http://www.mspiggy.etl.noaa.gov/write/

VNR Vignana Jyothi Institute of Engineering & Technology

I Year B.Tech CSE – I Sem	**L**	**T/P/D**	**C**
	4	**0**	**4**

(13CSE001) COMPUTER PROGRAMMING

Course objectives

1. Learn how to write modular, efficient and readable C programs
2. Declare and manipulate single and multi-dimensional arrays of the C data types.
3. Describe the techniques for creating program modules in C using functions and recursive functions.
4. Create and manage derived data types and perform operations on files.
5. Utilize pointers and dynamic memory allocation functions to efficiently solve problems

Course Outcomes:

Upon completion of the course, the students are expected to:

1. Write, compile and debug programs in C language.
2. Use different data types in a computer program.
3. Design programs involving decision structures, loops ,arrays and functions.
4. Explain the difference between call by value and call by reference
5. Understand the dynamics of memory by the use of pointers.
6. Use different file operations to create/update basic data files.

UNIT- I

Computer fundamentals-Hardware, software, computer language , translators, Program Development steps-Algorithms, Pseudo code, flow charts, basic Linux commands ,Introduction to C Language – History, Simple C Program, Identifiers, Basic data types, user defined data types, Variables, Constants, type qualifiers, Managing Input / Output, Operators, Expressions, Precedence and Associativity, Expression Evaluation, Type conversions, Simple C Programming examples.

UNIT – II

Selection Statements – if and switch statements, Repetitive statements – while, for, do-while statements, C Programming examples, other statements related to looping – break, continue, go to, C Programming examples.

Arrays– Basic concepts, one-dimensional arrays, two – dimensional arrays, multidimensional arrays, C programming examples.

UNIT - III

Introduction to Structured Programming, Functions- basics, user defined functions, inter function communication, Standard functions, Storage classes-auto, register,

static, extern, scope rules, arrays to functions, recursive functions, example C programs.

Strings – Basic concepts, String Input / Output functions, arrays of strings, string handling functions, strings to functions, C programming examples.

UNIT - IV

Derived types – Structures – Basic concepts, nested structures, arrays of structures, structures and functions, unions, bit fields, C programming examples.

Pointers – Basic concepts, pointers and functions, pointers and strings, pointers and arrays, pointers and structures, self-referential structures , example C programs.

UNIT – V

Preprocessor Directives, Dynamic Memory Allocation.

File I/O – Basic concepts, text files and binary files, file input / output operations, file status functions (error handling), C programming examples, Command-Line Arguments.

TEXT BOOKS:

1. C programming A Problem-Solving Approach by Behrouz A.Forouzan,E.V.Prasad,Richard F.GilbergC How to Program Paul Deitel and Harvey Deitel , PH.
2. Computer Programming and Data Structures by E Balagurusamy, Tata McGraw Hill.

REFERENCES:

1. Let Us C Yashavant kanetkar BPB.
2. The C Programming Language by Brian W. Kernighan, Dennis M. Ritchie.
3. Absolute beginner's guide to C, Greg M. Perry, Edition 2,Publisher: Sams Pub., 1994.

VNR Vignana Jyothi Institute of Engineering & Technology

I Year B.Tech CSE – I Sem	**L**	**T/P/D**	**C**
	3	**0**	**3**

(13CED004) ENVIRONMENTAL STUDIES

Course Objectives:

1. Develop an understanding of the necessity of protection of environment
2. Develop an understanding of Natural resources
3. Develop an understanding of Biodiversity
4. Develop an understanding of Global Environmental problems
5. Develop an understanding of Environmental pollution

Course Outcomes:

On successful completion of this course, it is expected that students should be able to

1. Acquire the knowledge on environment
2. Acquire the knowledge of various Natural Resources
3. Develop skills in understanding of various environmental problems
4. Develop skills to protect the Environment

UNIT-I

Environmental Studies:

Introduction, Definition, scope and importance, Ecosystems: Introduction, types, characteristic features, structure and functions of ecosystems. Bio geo chemical cycle, Classification of Eco system.

UNIT-II

Natural Resources :classification of Resources, Land resources, Land as resource, Common property resources, Land degradation, Soil erosion and desertification, Effects of modern agriculture, fertilizer –pesticide problems, Forest resources, Use and over-exploitation.

Mining and dams – their effects on forest and tribal people, Water resources, Use and over- utilization of surface and groundwater, Floods, droughts, Water logging and salinity, Dams –benefits and costs, Conflicts over Water, Energy resources.

UNIT-III

Bio-diversity and its conservation, Value of bio-diversity -consumptive and productive use, social, ethical, aesthetic and option values, Bio-geographical classification of India – India as a mega diversity habitat, Threats to bio-diversity –Hot-spots, habitat loss, poaching of wild life, loss of species, seeds, etc. Conservation of bio-diversity – Insitu and Ex-situ conservation.

UNIT-IV

Environmental Pollution –Local and Global Issues, Nature of thermal pollution and nuclear hazards, Global warming, Acid rain, Ozone depletion., Environmental case studies.

UNIT-V

Environmental Problems in India, Drinking water, sanitation and public health, Effects of the activities on the quality of environment, Water scarcity and groundwater depletion, Controversies on major dams – resettlement and rehabilitation of people: problems and concerns, Rain water harvesting, cloud seeding and watershed management. Economy and Environment, The economy and environment interaction, Economics of development, preservation and conservation, Sustainability: theory and practices, Limits to growth, Equitable use of resources for sustainable life styles, Environmental Impact Assessment.

Text Books

1. Environmental Science - Y.Anjaneyulu, B S Publications.
2. Environmental studies-Deeksha dave, Cengage learning India Pvt. Ltd.,
3. Environmental sciences and Engineering - P. Venugopal Rao, PHI learning Pvt. Ltd.,
4. Environmental Science and Technology by M. Anji Reddy, B S Publications.

Reference books

1. Clark, R.S., Marine Pollution, Clanderson Press, Oxford, 2002.
2. Cunningham, W.P., et al. , Environmental Encyclopedia, Jaico Publishing House, Mumbai, 2003.

VNR VIGNANA JYOTHI INSTITUTE OF ENGINEERING & TECHNOLOGY

I Year B.Tech CSE, IT-I SEM	**L**	**T/P/D**	**C**
	0	**3**	**2**

(13MED103) IT & ENGINEERING WORKSHOP

Course Prerequisites:

Course Objectives:

1. To study/demonstrate the concepts of computer w.r.t. its hardware, operating system, assembling and disassembling.
2. To conduct the experiments related to production engineering technology.
3. To demonstrate the usage of power tools, CNC lathe and machine shop for different exercises

Course Outcomes: Students will be able to:

1. Identify, assemble, dissemble, install and write commands for a given configuration of a computer.
2. To develop components using the techniques of carpentry, tin smithy, forging, etc. listed in trades for exercises.
3. To work out the given models in machine shop and CNC lathe.

ITWORKSHOP

1. Computer Hardware: Identification of Peripherals
2. Assembling and disassembling of a PC
3. Simple diagnostic exercises – Related to hardware
4. Installation of Windows Operating System
5. Installation of Linux Operating System
6. Linux Basic Commands
7. Simple diagnostic exercises –Related to Operating System

TEXTBOOKS:

1. IT Essentials PC Hardware and Software Companion Guide Third Edition by Davis Anfinson and Ken Quamme CISC Press, Pearson Education.
2. PC Hardware and A+ Handbook – Kate J. Chase PHI (Microsoft)

ENGINEERING WORKSHOP

TRADES FOR EXCERCISES

At least **two** exercises from each trade:

1. Carpentry
2. Tin-Smithy
3. Fitting
4. Welding
5. Electrical Wiring

TRADES FOR DEMONSTRATION and EXPOSURE:

1. Power tools in construction, wood working, electrical engineering and mechanical engineering.
2. Machine shop.
3. CNC Lathe

TEXT BOOKS:

1. Workshop Manual by P.Kannaiah and K.L.Narayana; Publisher: Scitech.

VNR Vignana Jyothi Institute of Engineering & Technology

I Year B.Tech CSE – I Sem	**L**	**T/P/D**	**C**
	0	**3**	**2**

(13CSE101) COMPUTER PROGRAMMING LABORATORY

Course objectives

1. Gain a working knowledge of C programming to write modular, efficient and readable C programs by Identifying the structural elements and layout of C source code.
2. Declare and manipulate single and multi-dimensional arrays of the C data types and derived data types like structures, unions.
3. Use functions from the portable C library and to describe the techniques for creating program modules using functions and recursive functions.
4. Manipulate character strings in C programs.Utilize pointers to efficiently solve problems
5. Allocate memory to variables dynamically and Perform operations on text and binary files.

Course Outcomes:

Upon completion of the course, the students are expected to:

1. Understand the basic terminology used in computer programming and to write, compile and debug programs in C language.
2. Design programs involving decision structures, loops ,arrays and functions.
3. Understand the dynamics of memory by the use of pointers.
4. Use different file operations to create/update basic data files.

Week 1

a. Basic Linux commands

b. Simple C programs -to implement basic arithmetic operations – sum, average, product, smallest, largest of the numbers, difference, quotient and remainder of given numbers etc.

Week 2

Programs on if, else-if, nested if, else if ladder - largest and smallest of given numbers, to find the grade of a student based on marks, roots of a quadratic equation etc.

Week 3

a. Programs on switch-case – to check the type of a given character, to find the grade of a student etc.

b. Programs on while and do-while- to find factorial, Fibonacci series, GCD, sin(x), cos(x) series , to check whether a given number is an Armstrong, Palindrome, Perfect, number conversion, and Prime number etc.

Week 4

Programs on for loop- sum of n natural numbers, factorial, sin(x), to generate Pascal's triangle etc.

Week 5

a. Programs on nested loops – check for Fibonacci prime, Pyramids of numbers, generation of prime numbers in the given range, multiplication table etc.

b. programs using break, go to, continue.

Week 6

a. Programs on 1-D array-finding Minimum and maximum element ,Sorting and Searching etc.

b. Programs on 2-D array – Sum, product and Multiplication of two Matrices etc.

Week 7

a. Programs on Functions-Implementation of user defined functions categories, passing of arrays to functions etc.

b. Programs on recursion - factorial of a given integer, GCD of two given integers etc.

Week 8

a. Programs on String handling functions-Copying, reverse, substring, concatenation.

b. Programs on structure and unions.

Week 9

Midterm exam

Week 10

Programs using pointers- pointer basic operations, pointers and functions etc

Week 11

Programs on pointers and structures, Pointers and arrays, pointers and strings.

Week 12

Programs on files-Implementation of file handling functions.

Week 13

a. Programs on files error handling.

b. Programs on Dynamic memory allocation

Week 14

Programs on command line arguments.

Week 15

Programs on preprocessor directives

Week 16

Internal Lab Exam

VNR Vignana Jyothi Institute of Engineering & Technology

I Year B.Tech CSE – I Sem	**L**	**T/P/D**	**C**
	0	**3**	**2**

13EPC101 Engineering Physics & Engineering Chemistry Laboratory

Course Objectives:

1. To practically learn interaction of light with matter through physical phenomena like interference, diffraction and dispersion.
2. To expose to the principle of superposition and resonance.
3. To demonstrate the formation of standing waves and to understand the mechanical wave behavior and to determine Rigidity Modulus of different material s of wires .
4. To demonstrate basic discharge phenomenon in capacitors and to know the characteristics of the circuit elements, like resistors, capacitors and inductors.

Course Outcomes:

After completion of the course, the students will be able to:

1. Understand clearly the interference principle in wave theory of light and able to relate it to the formation of Newton Rings and Obtain a pure spectrum when light passes through prism
2. Understand the formation and propagation of mechanical waves
3. Study simple oscillations of a load attached to a string and relate it to nature of material of string
4. Understand the physical significance of time constant and related uses

Any Eight Experiments from the following:

1. Dispersive Power of the material of a Prism using Spectrometer
2. Diffraction Grating (both with Laser and non laser source)
3. Single Slit with laser light
4. Newton's Rings
5. Finding thickness of a thin wire or sheet by forming a wedge shaped film
6. Energy gap of a semiconductor material
7. To determine the rigidity modulus of material of a wire
8. Melde's experiment
9. Sonometer Experiment
10. AC frequency by sonometer method
11. Numerical Aperture and Acceptance angle of an optical fiber cable
12. Attenuation and Bending losses in optical fiber
13. Stewart Gee's experiment
14. Characteristics of LED/Laser Diode.
15. Photo cell/ Solar Cell
16. RC circuit

Book: Essential Practical Lab Manual in Physics: by P.Raghavendra Rao

Engineering Chemistry Lab

Course Prerequisites: General Maths, General chemistry.

Course Objectives:

1. Estimation of hardness of water is essential for drinking water and in industries to avoid boiler troubles.
2. Knowledge of instrumentation in Colorimeter, Redwood viscometer, Conductivity meter and pH meter.
3. Knowledge of preparation of soap.

Course Outcomes:

1. Understand the extent of hardness range present in a water sample and its consequences if used for various industrial operations.
2. Determination of strength of solutions ,pH of various solutions, lubricants usage in machinery to prevent wear and tear.
3. Understanding the composition of soap used for washings.

1. TITRIMETRY

Estimation of hardness of water by EDTA method.

2. INSTRUMENTAL METHODS

(i) Conductometry

Conductometric titration of strong acid Vs Strong base

(ii) Colorimetry

Estimation of copper by colorimetric method

(iii) pH Metry

Titration of strong acid Vs Strong base by pH Metry

3. PHYSICAL PROPERTIES

Determination of viscosity of sample oil by Redwood viscometer.

4. PREPARATIONS

Preparation of i) soap ii) Nano-particles

TEXT BOOKS:

1. Laboratory Manual on Engineering Chemistry by S.K.Bhasin and Sudha Rani, Dhanpat Rai Publishing Company.
2. Laboratory Manual on Engineering Chemistry by Y.Bharathi Kumari, Jyotsna Cherukuri, VGS Book Links, Vijayawada

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I Year B.Tech CSE – II Sem	**L**	**T/P/D**	**C**
	3	**1**	**3**

(13MTH002)LINEAR ALGEBRA AND ORDINARY DIFFERENTIAL EQUATIONS

Course Objectives:

1. Understand the Echelon form and Normal form of a matrix and its applications in solving linear system of equations.
2. Understand the methods of solving first order differential equations and learn about its applications to L-R and R-C circuits.
3. Apply the convolution theorem to evaluate Laplace Transform of the functions.
4. Apply Z-Transforms in solving the difference equations.

Course Outcomes:

Upon completion of the course, the students are expected to:

1. Find the rank using Echolen form and Normal form.
2. Solve the problems in first order and second order differential equations.
3. learn Laplace Transform as a tool.
4. Evaluate the Z-Transform of the given function.

UNIT-I

LINEAR ALGEBRA – MATRICES

Rank of matrix, Hermitian and skew – Hermitian matrices, Inverse of matrix by elementary operations. Consistency of linear simultaneous equations, Eigen values and eigen vectors , Diagonalization of a matrix(including the case of repeated eigen values). Caley – Hamilton theorem (without proof), Quadratic forms - reduction of quadratic form to canonical form by linear transformation.

UNIT-II

ORDINARY DIFFERENTIAL EQUATIONS AND THEIR APPLICATIONS

Differential equations of first order and first degree - Exact differential equation , Linear and Bernoulli differential equation , Applications of differential equations of first order and first degree - Newton's law of cooling, Law of natural growth and decay, Orthogonal trajectories, and basic circuits(L-R Circuits, R-C Circuits).

UNIT-III

DIFFERENTIAL EQUATIONS OF HIGHER ORDER AND THEIR APPLICATIONS

Differential equations of higher order - homogeneous and non-homogenous type, differential equations of second order and higher order with constant coefficients with right hand side term of the type e^{ax} sin (ax), cos (ax), polynomials in x, e^{ax} V(x), x V(x) and method of variation of parameters ; Euler-Cauchy's 2^{nd} order

differential equations, applications to spring mass system ,Simple harmonic motion and L-C-R Circuits.

UNIT-IV

LAPLACE TRANSFORMS

Existence condition, Laplace transform of standard functions, Properties, Unit step function, Impulse function and Periodic function and their transforms. Inverse Laplace transform of functions using partial fractions, Convolution theorem(statement only). Solving linear differential equations using Laplace transforms.

UNIT- V :

Z-TRANSFORMS

z-transform; Inverse z-transform; Properties, initial, and final value theorems; Convolution theorem(theorems without proofs); Difference equations; Solutions of difference equations using z-transform.

TEXT BOOKS :

1. Higher Engineering Mathematics – B. S. Grewal,Khanna publishers.
2. A First Course in Differential Equations by Dennis G. Zill; Publisher: Brooks Cole publiers.
3. Advanced Engineering Mathematics by R.K.Jain and S.R.K.Iyengar; Narosa Publications.

REFERENCES :

1. Advanced Engineering Mathematics by Erwin Kreyszig, 8th Edition; Publisher: John Wiley.
2. Advanced Engineering Mathematics by Peter V. O'Neil, 9th Edition; Publisher: Cengage Learning

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I Year B.Tech CSE – II Sem	**L**	**T/P/D**	**C**
	3	**1**	**3**

(13MTH003)NUMERICAL ANALYSIS AND LINEAR PROGRAMMING

Course objectives:

1. Understand the numerical methods for non linear systems, evaluating definite integrals and ordinary differential equations.
2. Understand various methods of interpolation.
3. Understand the simplex method and methods to solve the transportation problem.

Course outcomes:

Upon completion of the course, the students are expected to:

1. Apply the numerical methods to find a root of algebraic and transcendental equations.
2. Apply the numerical methods to find the solutions of ordinary differential equations.
3. Use simplex method procedure to optimize a linear function.
4. Solve transportation problems

UNIT I

Solutions of non-linear systems:

Introduction; Mathematical preliminaries; Solution of algebraic and transcendental equations – the iteration method , the bisection method, the method of false position, ,Newton - Raphson method, and their order of convergence.

UNIT II

Interpolation:

Introduction; Errors in polynomial interpolation; Finite differences; Forward differences; Backward differences; Central differences; Symbolic relations and separation of symbols; Differences of a polynomial; Newton's formulae for interpolation; Central difference interpolation formulae; Gauss's central difference formulae; Lagrange and Hermite interpolation formulae.

UNIT III

Numerical differentiation and Integration:

Numerical differentiation based on interpolation ,Numerical integration: Trapezoidal rule, Simpson's 1/3 rule, and Simpson's 3/8 rule.

Numerical solutions of ordinary differential equations:

Solution of initial value problems by Taylor's series - Picard's method of successive approximations, Euler's method, and Runge - Kutta methods; Predictor Corrector methods - Adams Bashforth Moulton method and Milne's method (without proofs).

UNIT IV

Linear programming Basic concepts; problem formulation, graphical method, canonical and standard forms of LPP simplex method, Artificial variables technique-Big-M method,

UNIT V

Transportation problems:

Balanced and Unbalanced transportation problems- North-West corner rule, Least cost method, Vogel's approximation method (VAM) and MODI method.

TEXT BOOKS

1. Elementary Numerical Analysis – B.S. Grewal, 3rd edition Publisher: Khanna Publishers
2. Operations Research - Taha H.A, Publisher: Mcmillan Publishing:

REFERENCES

1. Advanced Engineering Mathematics by Erwin Kreyszig, 8th Edition; Publisher: John Wiley and Sons.
2. Elementary Numerical Analysis – an algorithmic approach -Samuel D. Conte and Carl De Boor (2006);3rd edition; Publisher: Tata McGraw Hill 3. Operations Research – by S.D. Gupta
3. Operations Research**-** Kantiswaroop , P.K Gupta and Manmohan, 4th edition, Publisher: Sultan Chand& Sons.

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I Year B.Tech CSE – II Sem	**L**	**T/P/D**	**C**
	3	**0**	**3**

(13PHY004) APPLIED PHYSICS

Course Objectives:

1. To learn the basic operators and expectation values in quantum mechanics
2. To learn different semiconductors and to calculate their carrier concentration and semiconductor devices
3. To learn the properties of magnetic materials and classification, Dielectric materials
4. To learn the concept and applications of superconductors

Course Outcomes:

After completion of the course, the students will be able to:

1. Recognize different types of operators and their applications and Learn expectation values and understand the tunneling effect.
2. To identify different semiconductors and to calculate their carrier concentration.
3. Learn the magnetic properties of materials,& classify the magnetic materials into Dia, Para and ferromagnetic materials.
4. Learn the characteristics, properties and applications of superconductors and magnetic materials.

UNIT -1

ADVANCED QUANTUM MECHANICS:

Schrodinger equation revisited: Time dependent wave equation, Linearity and Superposition, Expectation values and Operators (Position, Momentum and Energy operators), Finite Potential well, Tunnel Effect, Problems.

UNIT -2

SEMICONDUCTOR PHYSICS:

Fermi level in Intrinsic and Extrinsic semiconductors - Intrinsic semiconductor and carrier concentration – Extrinsic semiconductor and carrier concentration – Equation of continuity – Direct and indirect band gap semiconductors - Hall Effect.

PHYSICS OF SEMICONDUCTOR DEVICES:

Formation of p-n junction – open circuit p-n junction – Energy diagram of diode – i/v characteristics of p-n junction diode – p-n diode as a rectifier – Diode equation – Introduction to LED, BJT and FET.

UNIT -3

MAGNETIC PROPERTIES OF MATERIALS:

Permeability, Field intensity, magnetic field induction, Magnetization and Magnetic susceptibility – Origin of magnetic moment, Bohr magneton – Classification of

magnetic materials (Dia, Para and Ferro)- Domain theory of ferromagnetism, Hysteresis curve – Soft and Hard magnetic materials – Ferrites and their applications.

UNIT -4

DIELECTRIC PROPERTIES:

Electric dipole, Dipole moment, Dielectric constant, Electronic, Ionic and Orientation Polarization – Calculation of Polarizibilities – Frequency dependence of Polarization-Internal fields – Claussius – Mossotti equation –Piezo and Ferro electricity.

UNIT -5

SUPERCONDUCTORS:

Experimental survey and superconductivity phenomenon, – Meissner effect – Critical fields and Persistent currents, Type I and Type II superconductors - London equations-penetration depth-flux quantization-BCS Theory- Josephson Effect– High temperature Superconductors, Applications of Superconductors.

TEXT BOOKS:

1. Concepts of Modern physics by Arthur Beiser, McGraw Hill Inc.
2. Applied Physics by P.K.Mittal, IK International Publishing House (P) Ltd
3. Electronic Devices and circuits by Milliman and Halkias

REFERENCES

1. Engineering Physics by G Sahashra Buddhe; University Press
2. Quantum Mechanics by Gupta Kumar Sharma
3. Elements of Solid State Physics by J.P.Srivatsva, PHI Publishers
4. Engineering Physics by M.R.Srinivasan, New Age Publishers
5. Solid State Physics by M.A. Wahab.

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I Year B.Tech CSE – II Sem	L	T/P/D	C
	4	0	4

(13CSE032) CODE OF ETHICS

Course Objectives

1.To be aware of Contribute to society and human well-being
2. To familiarize with the concepts of Avoid harm to others
3. To learn more about Honor property rights
4. To understand important concepts Professional Responsibility

Course Outcomes

Upon completion of this course, students should be able to:

1.Be aware of Work to extend public knowledge, understanding, and appreciation of information processing and its consequences.

2 .Be aware of the social and ethical issues associated with human performance measurement .

3 Assess the use of technology equipment to intimidate, insult, embarrass, or harass others.

UNIT – I: GENERAL MORAL IMPERATIVES.

1.1 Contribute to society and human well-being.

This principle concerning the quality of life of all people affirms an obligation to protect fundamental human rights and to respect the diversity of all cultures. An essential aim of computing professionals is to minimize negative consequences of computing systems, including threats to health and safety. When designing or implementing systems, computing professionals must attempt to ensure that the products of their efforts will be used in socially responsible ways, will meet social needs, and will avoid harmful effects to health and welfare.

In addition to a safe social environment, human well-being includes a safe natural environment. Therefore, computing professionals who design and develop systems must be alert to, and make others aware of, any potential damage to the local or global environment.

1.2 Avoid harm to others.

"Harm" means injury or negative consequences, such as undesirable loss of information, loss of property, property damage, or unwanted environmental impacts. This principle prohibits use of computing technology in ways that result in harm to any of the following: users, the general public, employees, and employers. Harmful actions include intentional destruction or modification of files and programs leading to serious

loss of resources or unnecessary expenditure of human resources such as the time and effort required to purge systems of "computer viruses."

Well-intended actions, including those that accomplish assigned duties, may lead to harm unexpectedly. In such an event the responsible person or persons are obligated to undo or mitigate the negative consequences as much as possible. One way to avoid unintentional harm is to carefully consider potential impacts on all those affected by decisions made during design and implementation.

To minimize the possibility of indirectly harming others, computing professionals must minimize malfunctions by following generally accepted standards for system design and testing. Furthermore, it is often necessary to assess the social consequences of systems to project the likelihood of any serious harm to others. If system features are misrepresented to users, coworkers, or supervisors, the individual computing professional is responsible for any resulting injury.

In the work environment the computing professional has the additional obligation to report any signs of system dangers that might result in serious personal or social damage. If one's superiors do not act to curtail or mitigate such dangers, it may be necessary to "blow the whistle" to help correct the problem or reduce the risk. However, capricious or misguided reporting of violations can, itself, be harmful. Before reporting violations, all relevant aspects of the incident must be thoroughly assessed. In particular, the assessment of risk and responsibility must be credible. It is suggested that advice be sought from other computing professionals.

1.3 Be honest and trustworthy.

Honesty is an essential component of trust. Without trust an organization cannot function effectively. The honest computing professional will not make deliberately false or deceptive claims about a system or system design, but will instead provide full disclosure of all pertinent system limitations and problems.

A computer professional has a duty to be honest about his or her own qualifications, and about any circumstances that might lead to conflicts of interest.

Membership in volunteer organizations such as ACM may at times place individuals in situations where their statements or actions could be interpreted as carrying the "weight" of a larger group of professionals. An ACM member will exercise care to not misrepresent ACM or positions and policies of ACM or any ACM units.

1.4 Be fair and take action not to discriminate.

The values of equality, tolerance, respect for others, and the principles of equal justice govern this imperative. Discrimination on the basis of race, sex, religion, age, disability, national origin, or other such factors is an explicit violation of ACM policy and will not be tolerated.

Inequities between different groups of people may result from the use or misuse of information and technology. In a fair society, all individuals would have equal opportunity to participate in, or benefit from, the use of computer resources regardless of race, sex, religion, age, disability, national origin or other such similar factors.

However, these ideals do not justify unauthorized use of computer resources nor do they provide an adequate basis for violation of any other ethical imperatives of this code.

1.5 Honor property rights including copyrights and patent.

Violation of copyrights, patents, trade secrets and the terms of license agreements is prohibited by law in most circumstances. Even when software is not so protected, such violations are contrary to professional behavior. Copies of software should be made only with proper authorization. Unauthorized duplication of materials must not be condoned.

1.6 Give proper credit for intellectual property.

Computing professionals are obligated to protect the integrity of intellectual property. Specifically, one must not take credit for other's ideas or work, even in cases where the work has not been explicitly protected by copyright, patent, etc.

1.7 Respect the privacy of others.

Computing and communication technology enables the collection and exchange of personal information on a scale unprecedented in the history of civilization. Thus there is increased potential for violating the privacy of individuals and groups. It is the responsibility of professionals to maintain the privacy and integrity of data describing individuals. This includes taking precautions to ensure the accuracy of data, as well as protecting it from unauthorized access or accidental disclosure to inappropriate individuals. Furthermore, procedures must be established to allow individuals to review their records and correct inaccuracies.

This imperative implies that only the necessary amount of personal information be collected in a system, that retention and disposal periods for that information be clearly defined and enforced, and that personal information gathered for a specific purpose not be used for other purposes without consent of the individual(s). These principles apply to electronic communications, including electronic mail, and prohibit procedures that capture or monitor electronic user data, including messages, without the permission of users or bona fide authorization related to system operation and maintenance. User data observed during the normal duties of system operation and maintenance must be treated with strictest confidentiality, except in cases where it is evidence for the violation of law, organizational regulations, or this Code. In these cases, the nature or contents of that information must be disclosed only to proper authorities.

1.8 Honor confidentiality.

The principle of honesty extends to issues of confidentiality of information whenever one has made an explicit promise to honor confidentiality or, implicitly, when private information not directly related to the performance of one's duties becomes available. The ethical concern is to respect all obligations of confidentiality to employers, clients, and users unless discharged from such obligations by requirements of the law or other principles of this Code.

UNIT – II: MORE SPECIFIC PROFESSIONAL RESPONSIBILITIES.

2.1 Strive to achieve the highest quality, effectiveness and dignity in both the process and products of professional work.

Excellence is perhaps the most important obligation of a professional. The computing professional must strive to achieve quality and to be cognizant of the serious negative consequences that may result from poor quality in a system.

2.2 Acquire and maintain professional competence.

Excellence depends on individuals who take responsibility for acquiring and maintaining professional competence. A professional must participate in setting standards for appropriate levels of competence, and strive to achieve those standards. Upgrading technical knowledge and competence can be achieved in several ways: doing independent study; attending seminars, conferences, or courses; and being involved in professional organizations.

2.3 Know and respect existing laws pertaining to professional work.

ACM members must obey existing local, state, province, national, and international laws unless there is a compelling ethical basis not to do so. Policies and procedures of the organizations in which one participates must also be obeyed. But compliance must be balanced with the recognition that sometimes existing laws and rules may be immoral or inappropriate and, therefore, must be challenged. Violation of a law or regulation may be ethical when that law or rule has inadequate moral basis or when it conflicts with another law judged to be more important. If one decides to violate a law or rule because it is viewed as unethical, or for any other reason, one must fully accept responsibility for one's actions and for the consequences.

2.4 Accept and provide appropriate professional review.

Quality professional work, especially in the computing profession, depends on professional reviewing and critiquing. Whenever appropriate, individual members should seek and utilize peer review as well as provide critical review of the work of others.

2.5 Give comprehensive and thorough evaluations of computer systems and their impacts, including analysis of possible risks.

Computer professionals must strive to be perceptive, thorough, and objective when evaluating, recommending, and presenting system descriptions and alternatives. Computer professionals are in a position of special trust, and therefore have a special responsibility to provide objective, credible evaluations to employers, clients, users, and the public. When providing evaluations the professional must also identify any relevant conflicts of interest.

Avoiding harm, any signs of danger from systems must be reported to those who have opportunity and/or responsibility to resolve them.

2.6 Honor contracts, agreements, and assigned responsibilities.

Honoring one's commitments is a matter of integrity and honesty. For the computer professional this includes ensuring that system elements perform as intended. Also,

when one contracts for work with another party, one has an obligation to keep that party properly informed about progress toward completing that work.
A computing professional has a responsibility to request a change in any assignment that he or she feels cannot be completed as defined. Only after serious consideration and with full disclosure of risks and concerns to the employer or client, should one accept the assignment. The major underlying principle here is the obligation to accept personal accountability for professional work. On some occasions other ethical principles may take greater priority.
A judgment that a specific assignment should not be performed may not be accepted. Having clearly identified one's concerns and reasons for that judgment, but failing to procure a change in that assignment, one may yet be obligated, by contract or by law, to proceed as directed. The computing professional's ethical judgment should be the final guide in deciding whether or not to proceed. Regardless of the decision, one must accept the responsibility for the consequences.
However, performing assignments "against one's own judgment" does not relieve the professional of responsibility for any negative consequences.

2.7 Improve public understanding of computing and its consequences.
Computing professionals have a responsibility to share technical knowledge with the public by encouraging understanding of computing, including the impacts of computer systems and their limitations. This imperative implies an obligation to counter any false views related to computing.
2.8 Access computing and communication resources only when authorized to do so.
Theft or destruction of tangible and electronic property is prohibited - "Avoid harm to others." Trespassing and unauthorized use of a computer or communication system is addressed by this imperative. Trespassing includes accessing communication networks and computer systems, or accounts and/or files associated with those systems, without explicit authorization to do so. Individuals and organizations have the right to restrict access to their systems so long as they do not violate the discrimination principle. No one should enter or use another's computer system, software, or data files without permission. One must always have appropriate approval before using system resources, including communication ports, file space, other system peripherals, and computer time.
UNIT – III: ORGANIZATIONAL LEADERSHIP IMPERATIVES.
BACKGROUND NOTE: This section draws extensively from the draft IFIP Code of Ethics, especially its sections on organizational ethics and international concerns. The ethical obligations of organizations tend to be neglected in most codes of professional conduct, perhaps because these codes are written from the perspective of the individual member. This dilemma is addressed by stating these imperatives from the perspective of the organizational leader. In this context "leader" is viewed as any

organizational member who has leadership or educational responsibilities. These imperatives generally may apply to organizations as well as their leaders. In this context "organizations" are corporations, government agencies, and other "employers," as well as volunteer professional organizations.

3.1 Articulate social responsibilities of members of an organizational unit and encourage full acceptance of those responsibilities.

Because organizations of all kinds have impacts on the public, they must accept responsibilities to society. Organizational procedures and attitudes oriented toward quality and the welfare of society will reduce harm to members of the public, thereby serving public interest and fulfilling social responsibility. Therefore, organizational leaders must encourage full participation in meeting social responsibilities as well as quality performance.

3.2 Manage personnel and resources to design and build information systems that enhance the quality of working life.

Organizational leaders are responsible for ensuring that computer systems enhance, not degrade, the quality of working life. When implementing a computer system, organizations must consider the personal and professional development, physical safety, and human dignity of all workers. Appropriate human-computer ergonomic standards should be considered in system design and in the workplace.

3.3 Acknowledge and support proper and authorized uses of an organization's computing and communication resources.

Because computer systems can become tools to harm as well as to benefit an organization, the leadership has the responsibility to clearly define appropriate and inappropriate uses of organizational computing resources. While the number and scope of such rules should be minimal, they should be fully enforced when established.

3.4 Ensure that users and those who will be affected by a system have their needs clearly articulated during the assessment and design of requirements; later the system must be validated to meet requirements.

Current system users, potential users and other persons whose lives may be affected by a system must have their needs assessed and incorporated in the statement of requirements. System validation should ensure compliance with those requirements.

3.5 Articulate and support policies that protect the dignity of users and others affected by a computing system.

Designing or implementing systems that deliberately or inadvertently demean individuals or groups is ethically unacceptable. Computer professionals who are in decision making positions should verify that systems are designed and implemented to protect personal privacy and enhance personal dignity.

3.6 Create opportunities for members of the organization to learn the principles and limitations of computer systems.

This complements the imperative on public understanding. Educational opportunities are essential to facilitate optimal participation of all organizational members.

Opportunities must be available to all members to help them improve their knowledge and skills in computing, including courses that familiarize them with the consequences and limitations of particular types of systems. In particular, professionals must be made aware of the dangers of building systems around oversimplified models, the improbability of anticipating and designing for every possible operating condition, and other issues related to the complexity of this profession.

UNIT-IV: Software Engineering Code of Ethics and Professional Practice -Public

4.1. Accept full responsibility for their own work.

4.2 Moderate the interests of the software engineer, the employer, the client and the users with the public good.

4.3 Approve software only if they have a well-founded belief that it is safe, meets specifications, passes appropriate tests, and does not diminish quality of life, diminish privacy or harm the environment. The ultimate effect of the work should be to the public good.

4.4 Disclose to appropriate persons or authorities any actual or potential danger to the user, the public, or the environment, that they reasonably believe to be associated with software or related documents.

4.5 Cooperate in efforts to address matters of grave public concern caused by software, its installation, maintenance, support or documentation.

4.6. Be fair and avoid deception in all statements, particularly public ones, concerning software or related documents, methods and tools.

4.7. Consider issues of physical disabilities, allocation of resources, economic disadvantage and other factors that can diminish access to the benefits of software.

4.8. Be encouraged to volunteer professional skills to good causes and contribute to public education concerning the discipline.

UNIT V: Software Engineering Code of Ethics and Professional Practice - CLIENT AND EMPLOYER

5.1. Provide service in their areas of competence, being honest and forthright about any limitations of their experience and education.

5.2. Not knowingly use software that is obtained or retained either illegally or unethically.

5.3. Use the property of a client or employer only in ways properly authorized, and with the client's or employer's knowledge and consent.

5.4. Ensure that any document upon which they rely has been approved, when required, by someone authorized to approve it.

5.5. Keep private any confidential information gained in their professional work, where such confidentiality is consistent with the public interest and consistent with the law.

5.6. Identify, document, collect evidence and report to the client or the employer promptly if, in their opinion, a project is likely to fail, to prove too expensive, to violate intellectual property law, or otherwise to be problematic.

5.7. Identify, document, and report significant issues of social concern, of which they are aware, in software or related documents, to the employer or the client.
5.8. Accept no outside work detrimental to the work they perform for their primary employer.
5.9. Promote no interest adverse to their employer or client, unless a higher ethical concern is being compromised; in that case, inform the employer or another appropriate authority of the ethical concern.
Source: www.acm.org

Suggested Readings:

- Ladd, John. "The Quest for a Code of Professional Ethics: An Intellectual and Moral Confusion." In Deborah G. Johnson (ed.) Ethical Issues in Engineering. New Jersey: Prentice Hall, 1991.
- Flores, Albert. "The Philosophical Basis of Engineering Codes of Ethics." In Vesilind P.A. and A. Gunn (eds), Engineering Ethics and the Environment. Cambridge: Cambridge University Press, 1998: 201-209.
- Ruth Chadwick (1998). Professional Ethics. In E. Craig (Ed.), Routledge Encyclopedia of Philosophy. London: Routledge. Retrieved October 20, 2006, from http://www.rep.routledge.com/article /L077
- Caroline Whitbeck, "Ethics in Engineering Practice and Research" Cambridge University Press, 1998 page 40
- RICS- MAINTAINING PROFESSIONAL AND ETHICAL STANDARDS
- Michael Davis , 'Thinking like an Engineer' in Philosophy and Public Affairs, 20.2 (1991) page 158

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I Year B.Tech CSE – II Sem	L	T/P/D	C
	4	0	4

(13ITD002) DATA STRUCTURES

Course Objectives:

1. To teach efficient storage mechanisms of data for an easy access.
2. To design and implementation of various basic and advanced data structures.
3. To introduce various techniques for representation of the data in the real world.
4. To develop application using data structures.
5. To improve the logical ability

Course Outcomes:

Upon completion of the course, the students are expected to:

1. Student will be able to choose appropriate data structure as applied to specified problem definition.
2. Student will be able to handle operations like searching, insertion, deletion, traversing mechanism etc. on various data structures.
3. Students will be able to apply concepts learned in various domains like DBMS, compiler construction etc.
4. Students will be able to use linear and non-linear data structures like stacks , queues , linked list.

UNIT-I

Data Structures – Introduction to Data Structures, abstract data types, Linear list – singly linked list implementation, insertion, deletion and searching operations on linear list, circular linked list implementation, Double linked list implementation, insertion, deletion and searching operations. Applications of linked lists.

UNIT –II

Stacks-Operations, array and linked representations of stacks, stack applications-infix to postfix conversion, postfix expression evaluation, recursion implementation.

UNIT-III

Queues-operations, array and linked representations. Circular Queue operations, Dequeues, applications of queue.

UNIT-IV

Trees – Definitions, Binary tree representation, Binary search tree, binary tree traversals.

Graphs – Definitions, Graph representations, Graph traversals.

UNIT-V

Searching and Sorting – Big O Notation, Sorting- selection sort, bubble sort, insertion sort, quick sort, merge sort,

Searching-linear and binary search methods.

TEXT BOOKS:

1. C Programming& Data Structures, B.A.Forouzan and R.F. Gilberg, Third Edition, Cengage Learning.
2. Data Structures Using C (Paperback) by Aaron M. Tenenbaum

REFERENCE BOOKS:

1. C& Data structures – P. Padmanabham, Third Edition, B.S. Publications.
2. Data Structures using C – A.M.Tanenbaum, Y.Langsam, and M.J. Augenstein, Pearson Education
3. C Programming & Data Structures, E. Balagurusamy, TMH.
4. C Programming & Data Structures, P. Dey, M Ghosh R Thereja, Oxford University Press
5. C& Data structures – E V Prasad and N B Venkateswarlu, S. Chand&Co.

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I Year B.Tech-CSE– II SEM	**L**	**T/P/D**	**C**
	2	**4**	**4**

(13MED176) ENGINEERING DRAWING

Course Prerequisites: Geometrical construction

Course Objectives:

1. Understand the usage of drawing instruments.
2. Understand the construction methods for drawing conic sections.
3. Identify the significance of curves in engineering practice like bridges, building, arches etc.
4. Understand first and third angle projections and methods.

Course Outcomes:

Students will be able to

1. Visualize the objects looking into projections.
2. Convert projections for isometric to orthographic and vice versa.
3. Work with Auto CAD for the above

UNIT – I

Introduction to Engineering Drawing; Introduction to AutoCAD; Construction of Ellipse, Parabola and Hyperbola – General and Special methods; Cycloidal curves.

UNIT – II

Projections of points; Projections of lines and planes – inclined to one plane and inclined to both the planes.

UNIT – III

Projections of solids: Prism, Pyramid, Cylinder, Cone - axis inclined to one plane and inclined to both the planes.

UNIT – IV

Isometric projections of lines, planes and simple solids.

UNIT – V

Conversion of orthographic views into isometric views and vice-versa.

TEXT BOOKS

1. Engineering Drawing By N.D.Bhatt.
2 Engineering Graphics By K.L. Narayana & P.Kannayya.

REFERENCES

1. Engineering Drawing and Graphics: Venugopal/ New age
2. Engineering Drawing: Johle / TMH

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I Year B.Tech-CSE– II SEM	**L**	**T/P/D**	**C**
	0	**3**	**2**

(13ITD102)DATA STRUCTURES LABORATORY

Course Objectives:

1. To develop skills to design and analyze simple linear and nonlinear data Structures
2. To Strengthen the ability to identify and apply the suitable data structure for the given real world problem
3. To Gain knowledge in practical applications of data structures

Course Outcomes:

Upon completion of the course, the students are expected to:

1. Be able to design and analyze the time and space efficiency of the data structure
2. Be capable to identity the appropriate data structure for given problem
3. Have practical knowledge on the application of data structures

WEEK1:
1. Write a program for creation, Search and Traversal of Single Linked List
2. Write a program to perform insertion and deletion operations in Single Linked List
3. Write a program to merge two single linked lists

WEEK2:
4. Write a program for creation, Search and Traversal of Circular Linked List
5. Write a program to perform insertion and deletion operations in Circular Linked List

WEEK 3:
6. Write a program for creation, Search and Traversal of Double Linked List
7. Write a program to perform insertion and deletion operations in Double Linked List

WEEK 4:
8. Write a program to implement stack using Arrays
9. Write a program to implement stack using Linked List

WEEK 5:
10. Write a program to convert infix expression to postfix expression using stack
11. Write a program to evaluate postfix expression

WEEK 6:
12. Programs using recursion
13. Write a program to convert infix expression to prefix expression

using stack

WEEK 7: 14. Write a program to implement Linear queue using Array
15. Write a program to implement Linear queue using Linked List

WEEK 8: 16. Write a program to implement insertions and deletions in a circular Queue
17. Write a program to perform search and count operations in a circular queue

WEEK 9: 18. Write a program to implement insertions and deletions in a Dequeue
19. Write a program to perform search and count operations in Dequeue

WEEK 10: **Midterm Exam**

WEEK 11: 20. Write a program to implement Linear search
21. Write a program to implement Binary Search

WEEK 12: 22. Write a program to implement Selection sort
23. Write a program to implement Bubble sort
24. Write a program to implement Insertion sort

WEEK 13: 25. Write a program to implement Merge sort
26. Write a program to implement Quick sort

WEEK 14: 27. Implementation of a binary tree representation using Arrays
28. Write a program to implement tree traversals.

WEEK 15: 29. Implementation of a Graph representation using Adjacency Matrix
30. Write a program to implement graph traversals.

WEEK 16: **Final Internal Lab Exam**

TEXT BOOKS:

1. C Programming & Data Structures, B.A.Forouzan and R.F. Gilberg, Third Edition, Cengage Learning.
2. Data Structures Using C (Paperback) by Aaron M. Tenenbaum

REFERENCE BOOKS:

1. C& Data structures – P. Padmanabham, Third Edition, B.S. Publications.
2. Data Structures using C – A.M.Tanenbaum, Y.Langsam, and M.J. Augenstein, Pearson Education / PHI
3. C Programming & Data Structures, E. Balagurusamy, TMH.
4. C Programming & Data Structures, P. Dey, M Ghosh R Thereja, Oxford University Press
5. C& Data structures – E V Prasad and N B Venkateswarlu, S. Chand&Co.

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	0	**3**	**2**

(13ENG101)ENGLISH LANGUAGE COMMUNICATIONS SKILLS LABORATORY

The English language Communication Skills Lab aims to provide practice in all the four skills of LSRW, with a special emphasis on listening and speaking skills.

Course Objectives

1. Provide ample practice in LSRW skills.
2. Provide practice in grammatical construction, structural patterns, word usage and improve comprehension abilities in the students.
3. Train students to use neutral pronunciation through phonetic sounds, symbols, stress and intonation.
4. Enable students to transfer information from verbal to graphic representation and vice versa.
5. Train students to use effective language for oral presentations, public speaking, role play and situational dialogue.

Course Outcomes

Upon completion of the course, the students are expected to:

1. Comprehend spoken and written discourse.
2. Speak fluently with neutral pronunciation and exhibit interpersonal skills.
3. Write accurately, coherently and lucidly making appropriate use of words depending on context and present data clearly.
4. Introduce oneself to people and be able to speak extempore.

Syllabus for Lab Sessions

Unit 1

Multimedia Lab

1. Grammar : Nouns and Pronouns; Articles; The Present Tense
2. Vocabulary Lesson 1
3. Listening Comprehension

Communication Skills Lab: Introduction of Self and others

Unit 2

Multimedia Lab:

1. Grammar: Concord; Adjectives; The Past Tense
2. Vocabulary: Lesson 2
3. Listening Skills

Communication Skills Lab: Seeking and Giving Information, Giving and Taking Instructions

Unit 3

Multimedia Lab

1. Grammar --- Adverbs, Conjunctions, Prepositions; The Future Tense
2. Vocabulary Lesson 3
3. Telephoning Skills

Communication Skills Lab: Role Play/ Situational Dialogues

Unit 4

Multimedia Lab:

1. Grammar ---- Active and Passive Voice; Language Analysis
2. Vocabulary : Lesson 4
3. Listening Comprehension

Communication Skills Lab: i) JAM/ Short Talk ii) Information Transfer a) Interpretation of Graph

Unit 5

Multimedia Lab:

1. **Introduction to Technical Writing**
   A. Definition of a Technical Term
   B. Description of a Mechanism
   C. Description of a Technical Process
2. Vocabulary : Lesson 5

Communication Skills Lab : Presentation Skills: Oral Presentation

Multimedia Lab Requirements

The English Language Lab shall have two parts:

i) **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.

ii) **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.

iii) **System Requirement (Hardware component):**
Computer network with Lan with minimum 60 multimedia systems with the following specifications:
   i) P – IV Processor
   ii) Speed – 2.8 GHZ
   iii) RAM – 512 MB Minimum
   iv) Hard Disk – 80 GB
   v) Headphones of High quality

iv) Suggested Software:

The software consisting of the prescribed topics elaborated above should be procured and used.

List of 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)

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	3	**1**	**3**

(13MTH007)PROBABILITY STATISTICS AND QUEUING THEORY

Course prerequisites: permutations and combinations, basic statistics

Course Objectives:

1. Understand the elementary ideas in basic probability.
2. Understand the different types of probability distribution functions
3. Understand the basic concepts in estimation theory and test of hypothesis
4. Understand the basic concepts of queuing theory.

Course Outcomes:

Students will be able to

1. Solve problems involving basic probability.
2. Apply the knowledge of different probability distributions to Test of Hypothesis.
3. Calculate correlation, regression coefficients.
4. Apply the knowledge of different probability distributions to solve problems in queuing theory.

UNIT I

Probability and Distributions

Sample space and events, Probability- The axioms of probability, some elementary theorems, conditional probability, Baye's theorem. Random variables - discrete and continuous.distributions - Binomial, Poisson and Normal distributions–related properties.

UNIT II

Correlation and Regression

Coefficient of correlation, regression coefficient, the lines of regression, rank correlation

UNIT III

Sampling Distributions and Testing of Hypothesis

Sampling distributions, sampling distribution of means (σ known and unknown).Point estimation, interval estimation. Tests of hypothesis - null hypothesis, alternate hypothesis, type I, type II errors, critical region. Inferences concerning means and proportions- Large samples- test of hypothesis for single mean and difference between the means. Test of hypothesis for the proportions- single and difference between the proportions, confidence interval for the mean and proportions.

UNIT IV

Tests of significance- Small samples

Tests of significance-t distributions, confidence interval for the t- distribution, F-distributions and Chi square distributions.

UNIT V:

Queuing Theory

Queuing theory -Arrival process and service process- Pure birth and death process, M/M/1 model with finite and infinite capacities, M/M/C model with infinite capacity.

TEXT BOOKS

1. Probability and Statistics for Engineers – Richard .A.Johanson, 1995, 5th Edition, Prentice-Hall.
2. Some problems in the theory of queues. -Kendall, D. G. (1951) Journal of the Royal Statistical Society, Series B, **13**, 151–185..

REFERENCES

1. Applied Statistics for Engineers-Jay.L.Devore, Nicholas. R.Famum, Jimmy.A.Doi, 3rd Edition, Cengage
2. An Introduction to Probability Theory and Its Applications- Feller, W. (1968– Volume I and II. 2nd edn. John Wiley Inc., New York, NY.
3. The Single Server Queue -Cohen, J. W. (1969) .Wiley Interscience, New York, NY.

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II Year B.Tech CSE – I Sem	**L**	**T/P/D**	**C**
	3	**1**	**3**

(13EEE078)ELEMENTS OF ELECTRICAL & ELECTRONICS ENGINEERING

Course Objectives:

1. To understand the basic concepts of circuit analysis
2. To analyze electrical circuits using network theorems and analysis of AC circuits
3. To learn principle of operation, construction and characteristics of various electronic devices.
4. To know about different applications of these devices

Course Outcomes:

Upon completion of the course, the students are expected to:

1. Apply various network reduction techniques for electrical circuit analysis
2. Analyze electrical circuits using network theorems
3. Use devices in real life applications
4. Analyze and Design applications using these devices

UNIT I

Introduction to Electrical Circuits: Circuit Concept – Types of Elements– Types of sources-R-L-C parameters-Kirchhoff's laws- network reduction techniques–series, parallel, series parallel circuits, Source transformation–Mesh and Nodal analysis

UNIT-II

Network Theorems: Star-delta transformation, Super position, Reciprocity, Thevenin's, Norton's, Maximum power transfer theorems-Application of theorems for the analysis of DC circuits.

UNIT III

AC Circuits: Root mean square, average values, form factor and peak factor of alternating currents and voltages, Response of R-L, R-C and R-L-C circuits with sinusoidal excitation-Concept of reactance, impedance, phase and phase difference, Power factor, Real and reactive powers.

Diodes, Rectifiers and Filters:p-n Junction Diode, symbol, Diode Equation, Volt-Ampere Characteristics, Half wave Rectifier, Full wave rectifier, Bridge Rectifier, (Simple problems), Zener Diode, LED, LCD, Photo Diode.

UNIT IV:

Bipolar Junction Transistor(BJT)

NPN, PNP transistor Construction and principle of operation, symbol, input and output characteristics of transistor in Common Base, Common Emitter and Common

Collector Configurations, Relation between alpha, beta and gamma, Transistor as an Amplifier.

UNIT V:

Introduction to Amplifies

Definition of voltage gain, current gain, input resistance and output resistance in amplifies Concept of feedback, classification of feedback amplifies, General characteristics of negative feedback amplifies, effect of feedback on amplifies, Introduction to feedback topologies, Barkhausen criteria, principle of operation of LC and crystal oscillators

TEXT BOOKS

1. Basic Electrical Engineering - By M.S.Naidu and S. Kamakshiah – TMH.
2. Electrical circuits by Sudhkar and Shyam Mohan-TMH
3. Electronic Devices and Circuits – J.Millman, C.C.Halkias, and SatyabrathaJit, Tata McGraw Hill, 2nd Edition, 2007.
4. Electronic Devices and Circuits – R.L. Boylestad and Louis Nashelsky, Pearson/Prentice Hall, 11th Edition, 2006.
5. Electronic Devices and Circuits – David A Bell, Oxford University Press, 5th edition (2008)

REFERENCES

1. Electrical and Electronic Technology – By Hughes- Pearson Education.
2. Electrical engineering fundamentals by Vincent Del Toro
3. Electrical Circuit Theory and Technology – by John Bird, Elsevier Science & Technology, 2007
4. Integrated Electronics - J.Millman and Christos.C.Halkias, and Satyabratha, Jit Tata McGraw Hill, 2nd Edition, 2008.
5. Electronic Devices and Circuits – T.F. Bogart Jr., J.S.Beasley and G.Rico, Pearson Education, 6th Edition, 2004.
6. Electronic Devices and Circuits- S. S Salivahanan, N. Sursh Kumar, A. Vallava Raju,2nd Edition., TMH, 2010

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II Year B.Tech CSE – I Sem	**L**	**T/P/D**	**C**
	3	**1**	**3**

(13ITD003)ADVANCED DATA STRUCTURES THROUGH C++

Course Objectives:

1. Understand the various features object oriented programming.
2. Identify classes, objects, members of a class and their relationship needed for a specific problem.
3. To apply ADT concepts using templates.
4. Demonstrate data structure problem solutions, search and retrieval of information from text data.

Course Outcomes:

Upon completion of this course, students should be able to:

1. Develop programs using object oriented features in C++.
2. To implement algorithms into programming code.
3. Design applications using data structures such that optimizing searching.
4. Perform text processing operations using pattern matching algorithms.

UNIT I

C++ Class Overview, Class Definition, Objects, Class Members, Access Control, Class Scope, Constructors and destructors, parameter passing methods, Inline functions, static class members, this pointer, friend functions, dynamic memory allocation and de-allocation (new and delete), exception handling.

UNIT II

Function over Loading, Operator Overloading, Generic Programming- Function and class templates, Inheritance basics, base and derived classes, inheritance types, base class access control, runtime polymorphism using virtual functions, abstract classes, I/O streams.

UNIT III

Review of basic data structures, The list ADT, Stack ADT, Queue ADT, Implementation using template classes in C++. Priority Queues – Definition, ADT, Realizing a Priority Queue using Heaps, Definition, insertion, Deletion, Heap sort

UNIT IV

Dictionaries, linear list representation, Skip list representation, operations insertion, deletion and searching, hash table representation, hash functions, collision resolution-separate chaining, open addressing-linear probing, quadratic probing, double hashing, rehashing, extendible hashing, comparison of hashing and skip lists. Text Processing – Pattern matching algorithms-Brute Force, Knuth-Morris-Pratt algorithm, Tries – Standard tries, Compressed tries, Suffix tries.

UNIT V

Trees-Basic Terminology, Binary tree ADT, array and linked representations, traversals, threaded binary trees, Binary Search Trees : Definition, ADT, Implementation, Operations of Searching, Insertion and Deletion. AVL Trees, Definition, Operations-Insertion and Searching. B-Trees, Definition, B-Tree of order m, insertion, deletion and searching. Graphs : Basic terminology, representations of Graphs, Graph search methods – DFS, BFS.

TEXT BOOKS

1. Data structures, Algorithms and Applications in C++, S.Sahni, University Press (India) Pvt.Ltd, 2nd edition, Universities Press Orient Longman Pvt. Ltd.
2. 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 Algorithm Analysis in C++, Mark Allen Weiss, Pearson Education. Ltd., Second Edition.
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 and Algorithms Using C++, Ananda Rao Akepogu,Radhika Raju Palagiri.

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II Year B.Tech CSE – I Sem	**L**	**T/P/D**	**C**
	3	**1**	**3**

(13CSE002)MATHEMATICAL FOUNDATIONS FOR COMPUTER SCIENCE

Course Objectives:

1. Basic concepts on elementary statements
2. Statement calculus and predicate calculus
3. Relations and orderings and functions and knowledge on algebraic structures
4. Core concepts on elementary combinatrics and permutations
5. Different methods for solving the recurrence relations

Course Outcomes:

Upon completion of this course, students should be able to:

1. Solve problems on Statements, implications, and equivalence
2. Convert the statements into the different normal forms
3. Understand the system rules and inference theory and predicate calculus
4. Learn the basic applications on set theory
5. Define the various kinds of relations and find the best methods in order to solve them

UNIT I

Mathematical Logic: Statements and notations, Connectives, Well formed formulas, Truth Tables, tautology, equivalence implication, Normal forms, Quantifiers, universal quantifiers. Rules of inference, Consistency, proof of contradiction, Automatic Theorem Proving, Predicates: Predicative logic, Free & Bound variables.

UNIT II

Set Theory: notations, inclusion and equality sets, operations on sets, venn diagrams. Relations: Properties of binary Relations, equivalence, transitive closure, compatibility and partial ordering relations, Hasse diagram. Functions: Inverse Function, Composition of functions, recursive Functions. Algebraic structures: Algebraic systems, Examples and general properties, Semi groups and monoids, groups, and sub groups, Homomorphism, Isomorphism on groups and semi groups.

UNIT III

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

UNIT IV

Recurrence Relations: Generating Functions, Function of Sequences, Calculating Coefficients of generating functions, Recurrence relations, Solving recurrence relation by substitution and Generating functions, the method of Characteristic roots, solution of Inhomogeneous Recurrence Relations.

UNIT V

Graph Theory: Representation of Graphs, 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. Discrete mathematical structures with applications to computer science ,J.P.Trembly ,R.Manohar, Tata M c Graw Hill.
2. “Elements of Discrete Mathematics- A Computer Oriented Approach, C.L.Liu, D.P. Mohapatra, 3rdedition, Tata M c Graw Hill.
3. ” Discrete Mathematics for Computer Scientists & Mathematicians,” Second edition, J.L.Mott, A. Kandel, T.P. Baker, PHI

REFERENCES

1. Discrete Mathematics and its Applications, 5th edition, Kenneth.H.Rosen, TMH.
2. Discrete Mathematical Structures Theory and applications, Mallik and Sen, Cengage.
3. Discrete Mathematics with Applications, Thomas Koshy, Elsevier.
4. Logic and Discrete Mathematics, Grass Man and Tremblay,Pearson Education

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II Year B.Tech CSE – I Sem	**L**	**T/P/D**	**C**
	4	**0**	**4**

(13CMS001) BUSINESS ECONOMICS AND FINANCIAL ANALYSIS

Course Objectives:

1. To explain different forms of organizing private and public sector business enterprises and to analyze the significance of Business Economics in solving the problems of business enterprise. Also to define and analyze the concepts of Demand, Elasticity of Demand and Demand Forecasting Methods.
2. To analyze the various types of costs and to determine the level of output at which there is neither profit nor loss. To estimate capital requirements and to describe various sources of mobilizing funds. Also to identify least cost combinations of inputs produce desired quantity of output.
3. To describe the features of different market structure and pricing strategies.
4. To explain the basic accounting concepts and conventions. To elaborate the importance of finance function for evaluating the economic status of a business unit.

Course Outcomes

Upon the completion of this Course students should be able to:

1. Select the suitable form of business organization which meets the requirement of selected business also perform decision – making function effectively in an uncertain frame work by applying concepts of Managerial Economics. Meet and manipulate the demand efficiently and plan the future course of action.
2. Apply right kind cost to reduce cost by paying attention towards the costs which can be reduced. Take decision whether to buy or produce? Reduce the cost of capital by selecting best source of fund mobilization and select best investment opportunity which yields higher rate of return.
3. Fix the right price which can best meets the predetermined objectives of the business firm under different market conditions. Able to select best combination of inputs to produce required quantity of output.
4. Prepare books of accounts and know over all financial position of the business enterprise which enables the concerned to take appropriate measures to improve the situation. Also interpret the financial position from difference angles and initiates the measures/ efforts in that direction.

UNIT - I

BUSINESS AND NEW ECONOMIC ENVIRONMENT

Characteristic features of business; Features and evaluation of sole proprietorship; Partnership; Joint stock company; Public enterprises and their types; Changing business environment in post- liberalization scenario.

UNIT - II

INTRODUCTION TO BUSINESS ECONOMICS AND DEMAND ANALYSIS

Definition; Nature and scope of managerial economics - demand analysis determinants; Law of demand and its exceptions.

ELASTICITY OF DEMAND AND DEMAND FORECASTING

Definition; Types; Measurement and significance of elasticity of demand; Demand forecasting; Factors governing demand forecasting; Methods of demand forecasting - Survey methods, statistical methods, Expert opinion method, Test marketing, Controlled experiments, and Judgmental approach to demand forecasting.

UNIT - III

COST ANALYSIS

Cost concepts - Opportunity cost, Fixed vs. Variable costs, Explicit costs vs. Implicit costs, and Out of pocket costs vs. Imputed costs; Break-even analysis (BEA) - determination of break-even point (simple problems), managerial significance, and limitations of BEA.

CAPITAL AND CAPITAL BUDGETING

Capital and its significance; Types of capital; Estimation of fixed and working capital requirements; Methods and sources of raising finance.

Nature and scope of capital budgeting; Features of capital budgeting proposals; Methods of capital budgeting - payback method, Accounting Rate of Return (ARR), and Net Present Value method (simple problems)

UNIT - IV

THEORY OF PRODUCTION

Production function - isoquants and isocosts, least cost combination of inputs, and laws of returns; Internal and external economies of scale.

MARKET STRUCTURES

Types of competition; Features of perfect competition, Monopoly, and Monopolistic competition; Price-output determination in case of perfect competition and Monopoly.

PRICING POLICIES AND METHODS

Cost plus pricing; Marginal cost pricing; Sealed bid pricing; Going rate pricing, Limit pricing, Market skimming pricing, Penetration pricing, Two-part pricing, Block pricing, Bundling pricing, Peak load pricing, Cross subsidization.

UNIT V

INTRODUCTION TO FINANCIAL ACCOUNTING

Double-entry book keeping; Journal; Ledger; Trial balance; Final accounts - trading account, profit and loss account, and balance sheet with simple adjustments.

FINANCIAL ANALYSIS THROUGH RATIOS

Computation; Analysis and interpretation of liquidity ratios - current ratios, and quick ratio; Activity ratios - Inventory Turnover ratio, and Debtor Turnover ratio; Capital structure ratios – Debt-Equity ratio, and Interest Coverage Ratio; Profitability ratios - Gross profit Ratio, Net Profit Ratio, Operating Ratio, P/E ratio, and EPs.**Course**

TEXT BOOKS:

1. Managerial Economics and Financial Analysis, Aryasri, TMH, 2009.
2. Managerial Economics, Varshney & Maheswari: Sultan Chand, 2009.

REFERENCE BOOKS:

1. Financial Accounting for Management, Ambriah Gupta, Pearson Education, New Delhi, 2010.
2. Managerial Economics, H.Craig Peterson & W. Cris Lewis, PHI, 2010.

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II Year B.Tech CSE – I Sem	**L**	**T/P/D**	**C**
	3	**1**	**3**

(13CSE003) DIGITAL LOGIC DESIGN

Course Objectives:

This course covers the basics of digital logic circuits and design:

1. Boolean algebra and number systems introduces the student to the fundamentals of combinational logic design, their minimization(using K-Maps/Tabulation Methods), this enables building of PLD's
2. Student uses the above techniques to design sequential circuits (both synchronous and asynchronous).
3. Students will be provided with an opportunity to implement all the logic circuits using VHDL.
4. By the end of the course the student will be able to design, simulate, build, and debug combinational and sequential digital circuits based on an abstract functional specification.
5. The student will also understand the basic internal workings of the central processing unit of a computer and its interface with memory and input/output subsystems.

Course Outcomes:

Upon completion of this course, students should be able to:

1. To apply the principles of Boolean algebra to manipulate and minimize logic expressions.
2. To understand the functionalities, and minimization techniques using of all logical gates(NAND, NOR, AND, NOR, NOT, XOR,XNOR…)
3. To design combinational circuits using adders, decoders, Multiplexers, Encoders, De-Multiplexers, ROM , RAM, PLD's
4. The operation of sequential(sync. & async.) circuits (flip-flops, counters, registers, and register) and in analyzing the operation of sequential circuits along with hazards handling
5. For all the above concepts students will be able to simulate the functionalities using Verilog HDL with the support of the Lab.

UNIT-I NUMBERS SYSTEMS AND CODES

Review of number systems- number base conversion-binary arithmetic- binary weighted and non-weighted codes – Complements-Signed binary numbers-Error Detection and Correcting Codes-Binary Logic.

UNIT-II BOOLEAN ALGEBRA and GATE LEVEL MINIMIZATION

Postulates and theorems- representation of switching functions-SOP and POS forms – Canonical forms-digital logic gates –Karnaugh Maps –minimization using three variable, four variable and five variable K-Maps, Don't Care Conditions- NAND and NOR implementation , Other Two-Level Implementation –Exclusive –OR function - Integrated Circuits-Hardware Description Language(HDL)

UNIT-III DESIGN OF COMBINATIONAL CIRCUITS

Tabular Minimization- Combinational Circuits- Analysis and Design Procedure- Binary adder and subtractors – Carry Look-ahead adder-Decimal adder-Binary multiplier-magnitude comparator-BCD adder- Decoders- Encoders-Multiplexers-Random Access Memory-Read Only Memory-Programmable Logic Array-Programmable Array Logic - HDL for Combinational Circuits

UNIT-IV DESIGN OF SEQUENTIAL CIRCUITS

Combinational Vs Sequential Circuits – Latches-Flip Flops-RS flip flop, JK flip flop, T flip flop, D flip flop, Master-Slave Flip flop- Flip Flops excitation functions –Conversion of one flip flop to another flip flop- Asynchronous Vs Synchronous circuits-Analysis of clocked sequential circuits-State Table-State Diagram-State Reduction and State Assignment-Mealy and Moore Machines-capabilities and limitations of Finite State Machine-State equivalence and machine minimization-Design of synchronous counters- Ripple Counters-Asynchronous counters-Registers-Shift Registers- HDL for Sequential circuits.

UNIT-V ASYNCHRONOUS SEQUENTIAL LOGIC

Introduction-Analysis Procedure, Circuits with Latches, Design Procedure-Reduction of state and flow Tables – Race Free State Assignment Hazards, Design examples.

TEXT BOOKS :

1. DIGITAL DESIGN , Third Edition , M.Morris Mano, Pearson Education/PHI.
2. FUNDAMENTALS OF LOGIC DESIGN, Roth, 5th Edition,Thomson.

REFERENCES :

1. Switching and Finite Automata Theory by Zvi. Kohavi, Tata McGraw Hill.
2. Switching and Logic Design, C.V.S. Rao, Pearson Education
3. Digital Principles and Design Donald D.Givone, Tata McGraw Hill, Edition.
4. Fundamentals of Digital Logic & Micro Computer Design , 5TH Edition, M. Rafiquzzaman John Wiley

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II Year B.Tech CSE – I Sem	**L**	**T/P/D**	**C**
	0	**3**	**2**

(13EEE178) ELEMENTS OF ELECTRICAL AND ELECTRONICS ENGINEERING LAB

Course Objectives:

1. To understand the basic concepts of circuit analysis
2. To analyze electrical circuits using network theorems and analysis of AC circuits
3. To learn principle of operation, construction and characteristics of various electronic devices.
4. To know about different applications of these devices

Course Outcomes:

After going through this course the student will be able to

1. To apply basic network theorems for solving electrical networks.
2. Analyze various Electrical networks using Kirchhoff's laws.
3. To use the electronic devices in real time applications
4. Calculate h-parameters of BJT under various configurations.

PART A:

1. Verification of KVL and KCL
2. Verification of Superposition theorem
3. Verification of Reciprocity theorem
4. Verification of Thevenin's theorem
5. Verification of Norton's theorem
6. Verification of Maximum Power Transfer Theorem

PART B:

1. Forward and Reverse Bias V-I characteristics of PN junction Diode.
2. Zener diode V-I characteristics
3. Half Wave and Full Wave rectifier without filters.
4. Characteristics of a BJT under CE configuration.
5. Characteristics of a BJT under CB configuration
6. Frequency response of CE Amplifier.

Note: Any 10 of the above experiments 5 from each part to be conducted

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	0	**3**	**2**

(13CSE102)DIGITAL LOGIC DESIGN LAB

Course Objectives:

The objectives of this course are to:

1. Introduce the concept of digital and binary systems
2. Be able to design and analyze combinational logic circuits.
3. Be able to design and analyze sequential logic circuits.
4. Understand the basic software tools for the design and implementation of digital circuits and systems.
5. Reinforce theory and techniques taught in the classroom through experiments and projects in the laboratory.

Course Outcomes:

A student who successfully fulfils the course requirements will have demonstrated:

1. An ability to operate laboratory equipment.
2. An ability to construct, analyse, and troubleshoot simple combinational and sequential circuits.
3. An ability to design and troubleshoot a simple state machine.
4. An ability to measure and record the experimental data, analyse the results, and prepare a formal laboratory report.

EXERCISES

Programming can be done by using Verilog compiler and verification by simulation with any of the front end tools.

1. HDL code to realize all the logic gates.
2. Design of 2-to -4 decoder.
3. Design of 8-to-3 encoder
4. Design of 8-to-1 Multiplexer
5. Design of 1 to 8 Demultiplexer
6. Design of comparator
7. Design of half adder and full adder.
8. Design of half subtractor and full Subtractor.
9. Design of flip flops: SR, D, JK, T.
10. Design of code converters.
11. Design of 4-bit Asynchronous counter.
12. Design of 4-bit synchronous counter

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II Year B.Tech CSE – I Sem	**L**	**T/P/D**	**C**
	0	**3**	**2**

(13ITD103) ADVANCED DATA STRUCTURES THROUGH C++ LABORATORY

Course Objectives:

1. To implement various object oriented concepts like abstraction, encapsulation, polymorphism, inheritance etc.
2. To demonstrate exception handling mechanism.
3. To implement algorithms into programming code.
4. To implement dictionaries, various data structures like stacks, queues, trees, grphs using templates.

Course Outcomes:

Upon completion of this course, students should be able to:

1. Design applications using object oriented features.
2. Design applications using linear and non linear data structures.
3. Analyze performance of various data structures.
4. Perform text processing operations using pattern matching algorithms

WEEK 1

Implementation of C++ programs using - Constructors, friend functions, Parameter passing methods, this pointer, inline functions, static members, dynamic memory allocation, exception handling.

WEEK 2

Implementation of C++ programs using: Function over Loading, Operator Overloading, Function and class templates, inheritance types, runtime polymorphism using virtual functions, abstract classes, streams I/O.

WEEK 3

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

a) Stack ADT b) Queue ADT c) Linear list

WEEK 4

Write C++ programs to implement the following using linked list

a) Stack ADT b) Queue ADT c) Linear list

WEEK 5

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

a) Circular Queue ADT b) Dequeue ADT

WEEK 6

Write C++ programs to implement the following using linked list

a) Circular Queue ADT b) Dequeue ADT c) Double linked list

WEEK 7

Write C++ programs to implement the following on Binary search tree i)Insertions
ii) deletions
iii) search

WEEK 8

Write C++ programs to implement Binary tree traversals (preorder, inorder, postorder)

WEEK 9

Write C++ programs to implement bfs and dfs for a given graph

WEEK 10

Write C++ programs to implement
a) Heap sort b) merge sort

WEEK 11

Write C++ programs to implement all functions of dictionary (ADT) using hashing.

WEEK 12

Write C++ programs to implement Brute Force and Knuth –Morris-Pratt pattern matching algorithm

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	4	**0**	**4**

(13CSE004) FORMAL LANGUAGES AND AUTOMATA THEORY

Course objectives:

1. To introduce the theoretical foundations of computer science concerning– the relationships between languages and machines, the inherent limits of what can be computed, and the inherent efficiency of solving problems.
2. To determine a language's location in the Chomsky hierarchy (regular sets, context-free, context-sensitive, and recursively enumerable languages).
3. To convert among equivalently powerful notations for a language, including among DFAs, NFAs, and regular expressions, and between PDAs and CFGs.
4. To discuss the applications of theory to other areas of computer science such as algorithms, programming languages, compilers, natural language translation, operating systems, and software verification.
5. To build the foundation for students to pursue research in the areas of automata theory, formal languages, and computational power of machines

Course Outcomes:

At the end of this course the student should be able to

1. Understand the theory of automata.
2. Classify computational devices according to their computational power, and tools which will allow us to tell if a device is powerful enough to solve a given computational problem.
3. Understand the concept of the grammar and concept of programming language.
4. Understand Turing machine concept and in turn the technique applied in computers.
5. Classify P vs NP- Class problems and NP-Hard vs NP-complete problems.

UNIT-I

Fundamentals: strings, Alphabet, Language, Operations, Chomsky hierarchy of languages, Finite state machine Definitions, finite automation model, acceptance of strings and languages, DFA and NFA, transition diagrams and language recognizers. NFA with ε transitions –Equivalence between NFA with and without ε transitions, NFA to DFA conversion, minimization FSM, equivalence between two FSM's, Output machines- Moore and Mealy machine.

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). Regular Grammars – right linear and left linear grammars, equivalence between regular grammar and FA,

UNIT –III

Context Free Grammar, derivation trees, sentential forms, right most and left most derivations of strings. Ambiguity in Context free Grammars. Minimization of Context free grammars, CNF, GNF, Pumping Lemma for Context Free Languages. Enumeration of properties of CFL (proofs omitted).

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 (proofs not required), Introduction to DCFL and DPDA.

UNIT –IV

Turing Machine: Definition, model, Design of TM, computable functions, recursively enumerable languages. Church's hypothesis, counter machine, types of Turing Machines (proofs not required)

UNIT –V

Computability Theory: Linear Bounded Automata and context sensitive languages, LR (0) grammar, decidability of problems, Universal TM, Un decidable problems about Turing Machine – Post's Correspondence Problem - The classes P and NP.

TEXT BOOKS

1. H.E.Hopcroft, R.Motwani and J.D Ullman, "Introduction to Automata Theory, Languages and Computations", Second Edition, Pearson Education, 2003.

REFERENCES

1. H.R.Lewis and C.H.Papadimitriou, "Elements of The theory of Computation", Second Edition, Pearson Education/PHI, 2003
2. J.Martin, "Introduction to Languages and the Theory of Computation", Third Edition, TMH, 2003.
3. Micheal Sipser, "Introduction of the Theory and Computation", Thomson Brokecole, 1997.

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II Year B.Tech CSE – II Sem	**L**	**T/P/D**	**C**
	3	**1**	**3**

(13CSE005) DATA BASE MANAGEMENT SYSTEMS

Course objectıves:

1. To present an introduction to database management systems (DBMS) and relational data model.
2. To provide an emphasis on how to organize, maintain and retrieve information efficiently and effectively from a DBMS.
3. To introduce the concepts of transactions and transaction processing
4. To present the issues and techniques relating to concurrency and recovery in multi-user database environments

Course outcomes:

Upon completion of the course, the students are expected to:

1. Understand the fundamental concepts of database management. These concepts include aspects of database design, database languages, and database-system implementation.
2. The students will be able to design and query databases, as well as understand the internals of databases.
3. Define basic functions of DBMS & RDBMS.
4. Describe database development process and to Apply the Relational Database Model to understand the Logical and Physical aspects of the DBMS architecture.
5. Analyze database models & entity relationship models.Draw the E-R diagram for the given case study.
6. Use Structured Query Language (SQL) with complex queries.

UNIT-I

Introduction to Databases and Database Management System - Database system Applications - Advantages of DBMS over File System - Data Models – Instances and schema - View of Data - Database Languages -DDL-DML - Database Users and Administrator - Database System Structure.

UNIT-II

Database Design and ER diagrams – Attributes and Entity Sets – Relationships and Relationship Sets – Constraints - Keys - Design Issues - Entity-Relationship Diagram-Weak Entity Sets - Extended E-R Features- Database Design with ER model - Database Design for Banking Enterprise

UNIT – III

Introduction to the Relational Model – Structure of RDBMS - Integrity Constraints over Relations – Enforcing Integrity Constraints – Querying Relational Data - Relational Algebra and Calculus.

Introduction to SQL- Data Definition commands, Data Manipulation Commands, Basic Structure, Set operations Aggregate Operations - Join operations - Sub queries and correlated queries, SQL functions , views ,Triggers, Embedded SQL.

UNIT – IV

Functional Dependencies– Introduction , Basic Definitions, Trivial and Non trivial dependencies, closure of a set of dependencies, closure of attributes, irreducible set of dependencies- Schema Refinement in Database Design- Problems Caused by Redundancy – Decompositions – Problem Related to Decomposition — Lossless Join Decomposition – Dependency Preserving Decomposition - FIRST, SECOND, THIRD Normal Forms – BCNF — Multivalued Dependencies – Fourth Normal Form.

UNIT-V

Transaction concept- Transaction state- Implementation of atomicity and Durability- Concurrent executions – Serializability, Recoverability

Lock Based Protocols, Timestamp Based Protocols, Validation Based Protocols, Multiple Granularity, Dead Lock Handling – Failure Classification – Storage Structure - Recovery and Atomicity- Log Based recovery – Recovery with concurrent transactions – Checkpoints .

File Organization – Organization of records in file - Data Dictionary Storage – Indexing and Hashing – Basic Concepts , Ordered Indices,B^+Tree Index files, B- tree index files – Static Hashing – Dynamic Hashing – Comparision of Indexing with Hashing.

TEXTBOOKS.

1. Database System Concepts, Silberschatz, Korth , Fifth Edition, McGraw hill (1,2,3 & 5 Units)
2. Database Management Systems, Raghuramakrishnan, Johannes Gehrke, TATA Mc Graw Hill(1,2,3 & 5 Units)
3. Introduction to Database Systems, C.J.Date, Pearson Education (4^{th} Unit)

REFERENCES :

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

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II Year B.Tech CSE – II Sem	**L**	**T/P/D**	**C**
	3	**1**	**3**

(13ITD004) COMPUTER ORGANIZATION

Course Objectives:

1. This course is used to master the basic hardware and software issues of computer organization.
2. The students are expected to know the inner workings of processor, memory and I/O modules.
3. Understand how parallel processing is achieved using pipeline technique.
4. Ability to analyze the hardware and software issues related to computers and the interface between the two.

Course Outcomes:

Upon completion of this course, students should be able to:

1. Develop the ability and confidence to use the fundamentals of computer organization as a tool in the engineering of digital systems.
2. An ability to identify, formulate, and solve hardware and software computer engineering problems using sound computer engineering principles
3. The students are able to work out the tradeoffs involved in designing a modern computer.
4. Design tiny digital systems.

UNIT IBASIC STRUCTURE OF COMPUTERS

Computer types, functional unit, basic operational concepts, bus structures, multi processors and multi computers, multi tasking.Register Transfer Language and Micro operations: Register Transfer language, Regiser Transfer, Arithmetic Micro operations, Logic Micro operations, Shift Micro operations, Arithmetic logic shift unit.

UNIT IIBASIC COMPUTER ORGANIZATION AND DESIGN

Instruction Codes, Computer Registers, computer instructions – instruction Cycle, memory reference instructions, input-output and interrupt. Central Processing Unit: Stack organization, instruction formats, addressing modes, data transfer and manipulation, program control, CISC and RISC.

UNIT IIIMICROPROGRAMMED CONTROL

Control memory, address sequencing, micro program example, design of control unit, hardwired control, micro programmed control.

THE MEMORY ORGANIZATION

Memory hierarchy, Main Memory, Cache memory, performance considerations, virtual memory, secondary storage.

UNIT IVCOMPUTER ARITHMETIC

Addition and subtraction, multiplication algorithms, Division algorithms, floating-point arithmetic operations, Decimal arithmetic unit, Decimal arithmetic operations.

INPUT-OUTPUT ORGANIZATION: Peripheral devices, input-output interface, asynchronous data transfer, modes of transfer, priority interrupt, direct memory access.

UNIT VPIPELINE AND VECTOR PROCESSING

Parallel Processing, Pipelining, Arithmetic Pipeline, Instuction pipeline, RISC pipeline Vector Processing, Array Processors.

TEXT BOOKS

1. Computer System Architecture – M. Morris Mano, III edition, Pearson/PHI
2. Computer organization – Carl Hamacher, Zvonks Vranesic, Safeazaky, V edition, Mc Graw Hill

REFERENCES

1. Computer Organization and Architecture – William Stallings Sixth edition, Pearson/PHI
2. Fundamentals of Computer Organization and Design, Sivarama Dandamudi
3. Computer Architecture a Quantitative approach, John L. Hennessy and David A Patterson, Fourth edition Elsevier.
4. Computer Architecture Fundamentals and Principles of Computer Design, Joseph D/ Dumas II,BS Publication

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	3	**1**	**3**

(13CSE006)DESIGN AND ANALYSIS OF ALGORITHMS

Course Objectives:

1. Design and analysis of algorithms is a basis of computer science. The objective of this course is to cover key techniques for designing and analyzing algorithms. The topics include (but not limited to) (1) divide and conquer, (2) dynamic programming, (3) greedy algorithms, (4) backtracking, (5) branch and bound, (6) time and space complexity analysis, , and (7) theory of NP.
2. Learning classic algorithms
3. How to devise correct and efficient algorithms for solving a given problem
4. How to express algorithms
5. How to validate/verify algorithms

Course outcomes:

Upon completion of this course, students should be able to:

1. Describe and use major algorithmic techniques (divide-and-conquer, dynamic programming, linear programming, greedy paradigm, graph algorithms) and cite problems for which each technique is suitable.
2. Argue the correctness of algorithms using inductive proofs and loop invariants.
3. Evaluate and compare different algorithms using worst-, average-, and best-case analysis. Identify the complexity of problems.
4. Understand asymptotic notation, its properties and use in measuring algorithm behavior
5. Determine asymptotic expressions for the worst-case execution time and space requirements of algorithms and data structures.

UNIT I Introduction

Algorithm, Psuedo code for expressing algorithms, Performance Analysis-Space complexity, Time complexity, Asymptotic Notation- Big oh notation, Omega notation, Theta notation. **Disjoint Sets**- disjoint set operations, union and find algorithms, spanning trees, connected components and biconnected components.

UNIT II Divide and conquer

General method , applications-Binary search, Quick sort, Merge sort, Strassen's matrix multiplication**. Greedy method**: General method, applications-Job sequencing with dead lines, 0/1 knapsack problem, Minimum cost spanning trees, Single source shortest path problem, Huffman Codes.

UNIT III Dynamic Programming

General method, Principle of optimality, applications-Multistage graphs, Matrix chain multiplication, Optimal binary search trees, 0/1 knapsack problem, All pairs shortest path problem, Travelling sales person problem, Reliability design.

UNIT IV Backtracking

General method, applications- Recursive Permutation Generator ,N-queen problem, sum of subsets problem, Graph coloring, Hamiltonian cycles.

UNIT V Branch and Bound

General method, applications - Travelling sales person problem,0/1 knapsack problem-LC Branch and Bound solution, FIFO Branch and Bound solution. **NP-Hard and NP-Complete problems**: Basic concepts, non deterministic algorithms, NP - Hard and NP Complete classes, Cook's theorem.

TEXT BOOKS

1. Fundamentals of Computer Algorithms, Ellis Horowitz, Satraj Sahni and Rajasekharam, Galgotia publications pvt. Ltd.
2. Introduction to Algorithms, second edition, T.H.Cormen, C.E.Leiserso R.L.Rivest,and C.Stein, PHI Pvt. Ltd./ Pearson Education

REFERENCES

1. Algorithm Design: Foundations, Analysis and Internet examples M.T.Goodrich and R.Tomassia,John wiley and sons.
2. Introduction to Design and Analysis of Algorithms A strategic approach R.C.T.Lee, S.S.Tseng, R.C.Chang and T.Tsai, Mc Graw Hill.
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, Pearson Education

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	3	**1**	**3**

(13CSE007) SOFTWARE ENGINEERING

Course Objectives:

1. Understand the basic concepts and issues of software .
2. Identify Life cycle phases
3. Prepare the Requirements for a small software project
4. Understand process of Requirements Engineering and process of Design engineering
5. Recognize components of a Test Case

Course Outcomes:

Upon completion of this course, student should be able to:

1. Choose the appropriate Process model for the given project
2. Document the Requirements
3. Develop Different system Models
4. Create simple Test cases
5. Develop the skills for Software measurement and prepare RMMI plan

UNIT I

Introduction to Software Engineering : Changing nature of Software, Software Myths.

A Generic View Of Process:-Software engineering-A layered technology, The Capability Maturity Model Integration (CMMI)

Process Models:-The water fall 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

UNIT III

System models: context models, behavior models, data models, object models, structured methods

Design engineering: design process and design quality, design concepts the design model

Creating an architectural design: software architecture, data design, architectural styles and patterns, architectural design

UNIT IV

Test Strategies : A strategic approach to software testingBlack box and White box Testing, Validation Testing, System Testing,

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, ISO 9000 Quality standards

TEXT BOOKS

1. Roger S.Pressman, Software engineering- A practitioner's Approach, McGraw-Hill International Edition, 5th edition, 2001.

REFERENCES

1. Ian Sommerville, Software engineering, Pearson education Asia, 6th edition, 2000.
2. Pankaj Jalote- An Integrated Approach to Software Engineering,Springer Verlag, 1997.
3. James F Peters and Witold Pedryez, "Software Engineering – An Engineering Approach", John Wiley and Sons, New Delhi, 2000.
4. Ali Behforooz and Frederick J Hudson, "Software Engineering \ Fundamentals", Oxford University Press, New Delhi, 1996.

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	3	**1**	**3**

(13ITD005) JAVA PROGRAMMING

Course Objectives:

On completion, students will be able

1. To produce object-oriented solutions to a range of standard programming problems
2. They will be able to articulate and restructure programming objectives in the object- oriented paradigm.
3. They will be informed with regard to the fundamental concepts and principles of object-oriented programming
4. They will be able to apply these concepts in any programming language.

Course Outcomes:

Upon completion of this course, students should be able to:

1. Design/Develop Program
2. Implement Program
3. Test Program
4. Validate Program

UNIT-I Fundamentals of Object Oriented programming:

Object oriented paradigm - Basic concepts of Object Oriented Programming - Benefits of OOP - Applications of OOP

Java Evolution: Java Features - How Java differs from C and C++ - Java and Internet - Java and World Wide Web - Web Browsers - Hardware and Software Requirements - Java Environment. Overview of Java Language: Simple Java Program - Java Program Structure - Java Tokens- Java Statements - Implementing a Java Program - Java Virtual Machine - Constants - Variables - Data types - Scope of Variables-Symbolic Constants-Type Casting and type promotions – Operators, Operator Precedence and Associativity - Control Statements – break - continue- Arrays-Multi dimensional arrays, Wrapper Classes - Simple examples.

UNIT-II Classes:

Classes and Objects - Constructors – methods - this keyword – garbage collection-finalize - Overloading methods and constructors - Access Control- Static members – nested and inner classes – command line arguments - variable length arguments.

Inheritance: Forms of inheritance – specialization, specification, construction, extension, limitation, combination, benefits and costs of inheritance. Super uses- final -

polymorphism, method overriding - dynamic method dispatch –abstract classes – exploring String class.

UNIT-III Packages and Interfaces:

Defining and accessing a package – understanding CLASSPATH – access protection importing packages – Interfaces - Defining and implementing an interface, Applying interfaces, Variables in interfaces and extended interfaces. Exploring java.lang and java.util packages.

Exception Handling-Fundamentals, usage of try, catch, multiple catch clauses, throw, throws and finally. Java Built in Exceptions and creating own exception subclasses.

UNIT – IV Multithreaded Programming:

Java Thread life cycle model – Thread creation - Thread Exceptions - Thread Priority – Synchronization - Messaging - Runnable Interface - Interthread Communication - Deadlock - Suspending, Resuming and stopping threads.

I/O Streams: File – Streams – Advantages - The stream classes – Byte streams – Character streams.

Networks basics: Socket Programming - Proxy Servers - TCP/IP Sockets - Net Address - URL - Datagram's

UNIT – V Applet Programming:

How Applets differ from Applications - Applet Life Cycle - Creating an Applet - Running the Applet- Designing a Webpage - Applet Tag - Adding Applet to HTML file - More about Applet Tag - Passing parameters to Applets - Aligning the display.

Event handling: basics of event handling, Event classes, Event Listeners, delegation event model, handling mouse and keyboard events, adapter classes, AWT Class hierarchy - AWT Controls - Layout Managers and Menus, limitations of AWT, Swing, MVC architecture, components, containers, exploring swing.

TEXT BOOKS:

1. The Complete Reference Java J2SE 5th Edition, Herbert Schildt, TMH Publishing Company Ltd, NewDelhi.
2. Big Java 2nd Edition, Cay Horstmann, John Wiley and Sons

REFERENCE BOOKS:

1. Java How to Program, Sixth Edition, H.M.Dietel and P.J.Dietel, Pearson Education/PHI
2. Core Java 2, Vol 1, Fundamentals, Cay.S.Horstmann and Gary Cornell, Seventh Edition, Pearson Education.
3. Core Java 2, Vol 2, Advanced Features, Cay.S.Horstmann and Gary Cornell, Seventh Edition, Pearson Education.

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	0	**3**	**2**

(13CSE103)DATA BASE MANAGEMENT SYSTEMS LABORATORY

Course Objectives:

1. To provide a strong formal foundation in database concepts and a good formal foundation on the relational model of data
2. To familiarize the students with the nuances of database environments towards an information- oriented data-processing oriented framework
3. To present SQL and procedural interfaces to SQL comprehensively
4. To give an introduction to systematic database design approaches covering conceptual design, logical design and an overview of physical design
5. To present the concepts and techniques relating to query processing by SQLengines

Course outcomes:

At the end of this laboratory, the students should be able to:

1. Create, maintain and manipulate MySql Database.
2. Design and implement a database schema for a given problem-domain and Normalize a database
3. Populate and query a database using SQL DML/DDL commands.
4. Declare and enforce integrity constraints on a database using a state-of-the-art RDBMS
5. Programming PL/SQL including stored procedures, cursors and triggers.

Roadway Travels

"Roadway Travels" is in business since 1997 with several buses connecting different places in India. Its main office is located in Hyderabad.

The company wants to **computerize its operations** in the following areas:

- Reservations and Ticketing
- Cancellations

Reservations & Cancellation:

Reservations are directly handled by booking office. Reservations can be made 30 days in advance and tickets issued to passenger. One Passenger/person can book many tickets (to his/her family). Cancellations are also directly handed at the booking office.

In the process of **computerization** of **Roadway Travels** you have to design and develop a Database which consists the data of Buses, Passengers, Tickets, and Reservation and cancellation details. You should also develop query's using SQL to retrieve the data from the database. The above process involves many steps like

1. Analyzing the problem and identifying the Entities and Relationships

2. E-R Model 3. Relational Model4.Normalization 5. Creating the database 6. Querying. Students are supposed to work on these steps week wise and finally create a complete "Database System" to Roadway Travels. Examples are given at every experiment for guidance to students.

Experiment 1: E-R Model

Analyze the problem carefully and come up with the entities in it. Identify what data has to be persisted in the database. This contains the entities, attributes etc.

Identify the primary keys for all the entities. Identify the other keys like candidate keys, partial keys, if any.

Note: The student is required to submit a document by writing the Entities and Keys to the lab teacher.

Experiment 2: Concept design with E-R Model

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

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

Experiment 3: Relational Model

Represent all the entities (Strong, Weak) in tabular fashion. Represent relationships in a tabular fashion. There are different ways of representing relationships as tables based on the cardinality. Represent attributes as columns in tables or as tables based on the requirement. Different types of attributes (Composite, Multi-valued, and Derived) have different way of representation.

Note: The student is required to submit a document by Represent relationships in a tabular fashion to the lab teacher.

Experiment 4: Normalization

Database normalization is a technique for designing relational database tables to minimize duplication of information and, in so doing, to safeguard the database against certain types of logical or structural problems, namely data anomalies. For example, when multiple instances of a given piece of information occur in a table, the possibility exists that these instances will not be kept consistent when the data within the table is updated, leading to a loss of data integrity. A table that is sufficiently normalized is less vulnerable to problems of this kind, because its structure reflects the basic assumptions for when multiple instances of the same information should be represented by a single instance only.

Experiment 5: Practicing DDL and DML commands

Create all the normalized tables that are identified in Experiment 4.

Insert data into the above tables.

Experiment 6: Querying

In this week you are going to practice queries (along with sub queries) using ANY, ALL, IN, Exists, NOT EXISTS, UNION, INTERSECT, Constraints etc.

Practice the following Queries:

1. Display unique PNR_no of all passengers.
2. Display all the names of male passengers.
3. Display the ticket numbers and names of all the passengers.
4. Find the ticket numbers of the passengers whose name start with V and ends with 'h'.
5. Find the names of passengers whose age is between 30 and 45.
6. Display all the passengers names beginning with 'A'
7. Display the sorted list of passengers names.

Experiment 7 Querying (continued...)

You are going to practice queries using Aggregate functions (COUNT, SUM, AVG, and MAX and MIN), GROUP BY, HAVING and Creation and dropping of Views.

1. Write a Query to display the Information present in the Passenger and cancellation tables. Hint: Use UNION Operator.
2. Display the number of days in a week on which the 9WO1 bus is available.
3. Find number of tickets booked for each PNR_no using GROUP BY CLAUSE. Hint: Use GROUP BY on PNR_No.
4. Find the distinct PNR numbers that are present.
5. Find the number of tickets booked by a passenger where the number of seats is greater than 1. Hint: Use GROUP BY, WHERE and HAVING CLAUSES.
6. Find the total number of cancelled seats.
7. Display the details of passengers who travelled within the last 3 months.
8. Create a view for the details of passengers who cancelled their tickets.

Experiment 8: Create tables for the following schema.

Student(snum: integer, sname: string, major: string, level: string, age: integer)

Class(name: string, meets at: time, room: string, fid: integer)

Enrolled(snum: integer, cname: string)

Faculty(fid: integer, fname: string, deptid: integer)

Experiment 9: Querying

1. Find the names of all Juniors (Level = JR) who are enrolled in a class taught by I. Teacher.
2. Find the age of the oldest student who is either a History major or is enrolled in a course taught by I. Teacher.
3. Find the names of all classes that either meet in room R128 or have 5 or more students enrolled.
4. Find the names of all students who are enrolled in two classes that meet at the same time.
5. Find the names of faculty members who teach in every room in which some class is taught.

6. Find the names of faculty members for whom the combined enrollment of the courses that they teach is less than 5
7. Print the Level and the average age of students for that Level, for each Level.
8. Print the Level and the average age of students for that Level, for all Levels except JR.
9. Print the Level and the average age of students for that Level, whose average age is greater than 20.
10. Find the names of students who are enrolled in the maximum number of classes.
11. Find the names of students who are not enrolled in any class.
12. Count the number of junior level students.
13. Display all the students whose names starts with the letter "p".
14. Display all the teachers whose names contain letter 'a' or 'I' in their names.

Experiment 10: PL/SQL Programs

1. Program to find sum of first 'n' natural no.s
2. Program to find reverse of a number
3. Insert the values of areas of a circle into a table called areas taking radius values from 2 to 8.

Experiment 11: Cursors

In this week you need to do the following: Declare a cursor that defines a result set. Open the cursor to establish the result set. Fetch the data into local variables as needed from the cursor, one row at a time. Close the cursor when done.Practice the following programs using cursors.

1. Write a cursor program to retrieve the details of all students using cursors (Use students table in experiment 9)
2. Write a PL/SQL block to update the level of students from JL to "junior Level" and SL to "senior Level"and insert a record in newlevel table.
3. Write a cursor program to display the details of Senior Level students .

Experiment 12: Procedures

In this session you are going to learn Creation of stored procedure, Execution of procedure and modification of procedure. Practice procedures using the above database.

Experiment 13: Triggers

In this week you are going to work on Triggers. Creation of insert trigger, delete trigger, update trigger. Practice triggers using the above database.

REFERENCES:

1. Introduction to SQL,Rick F.Vander Lans,Pearson education.
2. Oracle PL/SQL, B.Rosenzweig and E.Silvestrova,Pearsoneducation.
3. Oracle PL/SQL Programming,Steven Feuerstein,SPD.
4. SQL & PL/SQL for Oracle 10g,Black Book, Dr.P.S.Deshpande,Dream Tech.
5. Oracle Database l l g PL/SQL Programming,M.Laughlin.TMH.
6. SQL Fundamentals,! J.Patrick,Pearson Education.

VNR Vignana Jyothi Institute of Engineering & Technology

II Year B.Tech CSE – II Sem	**L**	**T/P/D**	**C**
	0	**3**	**2**

(13CSE104) DESIGN AND ANALYSIS OF ALGORITHMS LABORATORY

Course Objectives:

1. To analyze worst-case running time of algorithms and understand fundamental algorithmic problems.
2. To understand how asymptotic notation is used to provide a rough classification of algorithms, how a number of algorithms for fundamental problems in computer science and engineering work and compare with one another.
3. To implement the methods of designing and analyzing algorithms
4. To study about various designing paradigms of algorithms for solving real world problems.

Course Outcomes: At the end of this laboratory, the students should be able to:

1. To prove the correctness and analyze the running time of the basic algorithms for those classic problems.
2. To design algorithms using the dynamic programming, greedy method, Backtracking, Branch and Bound strategy that employ this strategy
3. To compare, contrast, and choose appropriate algorithmic design techniques to present an algorithm that solves a given problem.
4. To develop the efficient algorithms for the new problem with suitable designing techniques.
5. To know the appropriate algorithmic design technique to specific problems.

Week 1:

1. A). WAP for Iterative and Binary Search.
   B).Print all the nodes reachable from a given starting node in a digraph using BFS method.
   C).Check whether a given graph is connected or not using DFS method.

Week 2:

2. A). Sort a given set of elements using the Quicksort method . Repeat the experiment for different values of n, the elements can be read from a file or can be generated using the random number generator.
   B). Sort a given set of elements using the Mergesort method . Repeat the experiment for different values of n, the elements can be read from a file or can be generated using the random number generator.

Week 3:

3. A). WAP for Sreassen Matrix Multiplication.
   B). Implement 0/1 Knapsack problem Using Greedy Method Algorithm.

Week 4:

4. Find Minimum cost spanning tree using Prims & Kruskals algorithm.

Week 5:

5. From a given vertex in a weighted connected graph, find shortest paths to other vertices using Dijkstra's algorithm.

Week 6:

6. WAP for Haffman Coding.

Week 7:

7. WAP for Multi Stage Graph problem to find optimal path between source and destination.

Week 8:

8. Implement Matrix Chain Mulplication algorithm.

Week 9:

9. WAP to find Optimal Binary Search Tree.

Week 10:

10. Implement solution for TSP problem using Dynamic Programming Technique.

Week 11:

11. A). Implement n-Queens problem using Backtracking.
    B). WAP for Hamiltonian Cycle Problem

Week 12

Implement the solution for TSP problem using Branch & Bound technique

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II Year B.Tech CSE – II Sem	**L**	**T/P/D**	**C**
	0	**3**	**2**

(13ITD104) JAVA PROGRAMMING LABORATORY

Course Objectives:

1. Understand basic principles of object-oriented program design using Java.
2. Understand the basic and some advanced issues related to writing classes and methods such as data, visibility, scope, method parameters, object references, and nested classes.
3. Understand the basic ideas behind class hierarchies, polymorphism, and programming to interfaces.
4. Get exposure to exceptions and basic I/O streams.
5. Develop solid Java programming skills and the ability to put in practice they acquired knowledge and understanding of the Java language and object-oriented design in relatively simple case studies.

Course Outcomes:

Upon completion of the course, the students are expected to:

1. **[Object-oriented Programming]**
   Be able to understand better the object-oriented approach in programming. Students should be able to analyze and design a computer program to solve real world problems based on object-oriented principles.
2. **[Java Programming Language]**
   Be able to write computer programs to solve real world problems in Java
3. **[Good Documentation Practices]**
   To learn and appreciate the importance and merits of proper comments in source code and API documentations
4. **[GUI Programming]**
   Be able to write simple GUI interfaces for a computer program to interact with users, and to understand the event-based GUI handling principles.

Exercises

1. Write a java program to print all the twin primes below 1000. (A twin prime is a prime number that differs from another prime number by two. (3, 5), (5, 7), (11, 13), (17, 19), (29, 31), (41, 43), .821, 823), etc. .
2. Write a java program to implement matrix multiplication. (Take the input from keyboard).
3. Write a Java program for sorting a given list of names in ascending order.
4. The Fibonacci sequence is defined by the following rule. The first two values in the sequence are 1 and 1. Every subsequent value is the run of the two values preceding it. Write a Java program that uses both recursive and non recursive functions to print the nth value in the Fibonacci sequence.

5. Write a Java program that prompts the user for an integer and then prints out all prime numbers up to that integer.
6. Write a Java program that checks whether a given string is a palindrome or not. Ex: MALAYALAM is a palindrome.
7. Write a Java program that prints all real solutions to the quadratic equation ax2 + bx + c = 0. Read in a, b, c and use the quadratic formula. If the discriminant b2 - 4ac is negative, display a message stating that there are no real solutions.
8. Write a java program to implement constructor overloading.
9. Write a java program to implement variable length arguments
10. Write a java program to implement the use of inner classes.
11. Write a java program to implement dynamic method dispatch.
12. Write a Java program that illustrates how run time polymorphism is achieved.
13. Write a java program that illustrates the following
    a. Handling predefined exceptions b. Handling user defined exceptions
14. Write a java program that illustrates the following
    - Creation of simple package.
    - Accessing a package.
    - Implementing interfaces.
15. Write a Java program for creating multiple threads
    a. Using Thread class b. Using Runnable interface
16. Write a Java program for creating multiple threads. The main method sleeps for 10 seconds at the end of which all the threads should be terminated.
17. Write a Java program that correctly implements producer consumer problem using the concept of inter thread communication.
18. Write a Java program that implements a simple client/server application. The client sends data to a server. The server receives the data, uses it to produce a result, and then sends the result back to the client. The client displays the result on the console. For ex: The client sends a Celsius value, and the result produced by the server is the Fahrenheit value.
19. Write a Java program that reads on file name from the user then displays information about whether the file exists, whether the file is readable, whether the file is writable, the contents of file and the length of the file in bytes.
20. Write a Java program that: (Use classes and objects)
    a) Implements stack ADT. b) Converts infix expression into Prefix form.
21. Write an applet that displays a simple message.
22. Write a java program for passing parameters to applets
23. Write a Java program that works as a simple calculator. Use a grid layout to arrange buttons for the Digits and for the + - * % operations. Add a text field to display the result.
24. Write a Java program for handling mouse and keyboard events.
25. Write a Java program for handling menu events.

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III Year B.Tech CSE – I Sem	**L**	**T/P/D**	**C**
	3	**1**	**3**

(13ITD008) OPERATING SYSTEMS

Course Objectives:

1. Analyze the tradeoffs inherent in operating system design.
2. Summarize the various approaches to solving the problem of mutual exclusion in an operating system.
3. Evaluate the trade-offs in terms of memory size (main memory, cache memory, auxiliary memory) and processor speed.
4. Demonstrate disk storage strategies, file strategies and I/O communication
5. Analyze the system protection and security with different cryptographical models.

Course Outcomes:

Upon completion of this course, students should be able to:

1. Identify the System calls, protection and interrupts of any GOS.
2. Explain Input/output, disk access, file systems facilities any GOS()
3. Write application keeping Concurrency and synchronization Semaphores/monitors, sharedmemory, mutual exclusion Process scheduling services of an GOS in the mind.

UNIT I

Computer System and Operating System Overview: Overview of Computer System hardware, Operating System Objectives and functions, Evolution of operating System, Example Systems. Operating System Services, System Calls, System Programs.

Process Management: Process Description, Process Control, Process States, Cooperating Processes, Inter-process Communication.

UNIT II

CPU Scheduling: Basic Concepts, Scheduling Criteria, Scheduling Algorithms and evaluation, Threads Overview, Threading issues.

Concurrency: Principles of Concurrency, Mutual Exclusion, Software and hardware approaches, Semaphores, Monitors, Message Passing, Classic problems of synchronization.

UNIT III

Principles of deadlock: System Model, Deadlock Characterization, Methods for handling Deadlocks, Deadlock Prevention, Deadlock avoidance, Deadlock detection, Recovery from Deadlocks, Dining philosopher's problem.

UNIT IV

Memory Management: Basic concepts, Swapping, Contiguous memory allocation, Paging, Segmentation, Virtual memory, Demand paging, Page-replacement algorithms, Thrashing.

Secondary storage structure: Disk structure; Disk scheduling, Disk management, Swap-space Management, RAID structure, Stable-storage Implementation, Tertiary-Storage Structure

I/O systems: I/O hardware, Application I/O interface, Kernel I/O subsystem, Transforming I/O request to hardware operations, STREAMS

UNIT V

File Management: File system-File concepts, Access methods, Directory structure, File system mounting, File sharing and Protection. Implementing file systems-File system structure and implementation, Directory implementation, Allocation methods, Free-space management, Efficiency and performance

Security: Security threats, Protection, Intruders, Viruses, Trusted System.

TEXT BOOKS

1. Operating System Principles- Abraham Silberchatz, Peter B. Galvin, Greg Gagne 7th Edition, John Wiley.
2. Operating Systems - Internal and Design Principles, Stallings, Fifth Edition-2005, Pearson education/PHI

REFERENCES

1. Operating System A Design Approach-Crowley,TMH.
2. Modern Operating Systems, Andrew S Tanenbaum 2nd edition Pearson/PHI.
3. “An Introduction to Operating Systems, Concepts and Practice”, PHI, 2003 - Pramod Chandra P. Bhat.
4. Operating Systems – A concept based approach – DM Dhamdhere – 2nd Edition TMH

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III Year B.Tech CSE – I Sem	**L**	**T/P/D**	**C**
	3	**1**	**3**

(13CSE008) OBJECT ORIENTED ANALYSIS AND DESIGN

Course Objectives:

1. To understand the Unified Modeling Language principles and Learns fundamental process pattern for object-oriented analysis and design.
2. Learn how to derive analysis model from use case requirements.
3. Learn how to model event-driven state of objects and to transform analysis model into design model that is a specification for implementation.
4. Identify subsystems, interfaces and collaborations. Apply collaborations to internal subsystem design.

Course Outcomes:

Upon completion of the course, the students are expected to:

In Software development life cycle **designing** is a crucial phase and at the end of this course student will be able to

1. Analyze the requirements through Use-Case View
2. Identify all structural and behavioral concepts of the entire system
3. Develop a model using UML concepts by different types of diagrams like Use case diagram, Class Diagram, Sequence Diagram e.t.c….
4. Apply the universal process pattern to object-oriented design using UML.

UNIT-I

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

UNIT-II

Basic Structural Modeling: Classes, Relationships, Common mechanisms and diagrams.

Advanced Structural Modeling**:** Advanced classes, advanced relationships, Interfaces, Types and Roles, Packages, Common modeling techniques.

UNIT-III

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

Basic Behavioral Modeling-I: Interactions, Interaction diagrams, Common modeling techniques

UNIT-IV

Basic Behavioral Modeling-II: Use cases, Use case diagrams, Activity diagrams, Common modeling techniques.

Advanced Behavioral Modeling: Events and signals, state machines, processes and Threads, time and space, state chart diagrams, Common modeling techniques.

UNIT-V

Architectural Modeling: Component, Deployment, Component diagrams, Deployment diagrams, Common modeling techniques, Case Studies

TEXT BOOKS

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

REFERENCES

1. Meilir Page-Jones: Fundamentals of Object Oriented Design in UML, Pearson Education.
2. Atul Kahate: Object Oriented Analysis & Design, The McGraw-Hill.\
3. Mark Priestley: Practical Object-Oriented Design with UML,TATA McGrawHill
4. Appling UML and Patterns: An introduction to Object – Oriented Analysis and Design and Unified Process, Craig Larman, Pearson Education.

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III Year B.Tech CSE – I Sem	**L**	**T/P/D**	**C**
	4	**0**	**4**

(13ITD006) COMPUTER NETWORKS

Course Objectives:

1. Build an understanding of the fundamental concepts of computer networking.
2. Familiarize the student with the basic taxonomy and terminology of the computer networking area.
3. Introduce the student to advanced networking concepts, preparing the student for entry Advanced courses in computer networking.
4. Allow the student to gain expertise in some specific areas of networking such as the design and maintenance of individual networks.

Course Outcomes:

Upon completion of this course, students should be able to:

1. Understand the Layered Architecture of Computer Networks.
2. Understand the operation of the main components of computer networks.
3. Learn various network protocols and algorithms.
4. Acquire the required skill to design simple computer networks.
5. Become familiar with security risks threatening computer networks.

UNIT – I

DATA COMMUNICATIONS: Components – Direction of Data flow – Networks – Components and Categories – Types of Connections – Topologies –Protocols and Standards – ISO / OSI model , Example Networks such as NSF NET, ARPANET, ATM, Frame Relay, ISDN

Physical layer: Digital transmission, Multiplexing, Transmission Media, Switching, Circuit Switched Networks, Datagram Networks, Virtual Circuit Networks, Switch and Telephone Networks.

UNIT II

Data link layer: Introduction, Framing,Error – Detection and Correction – Parity – LRC – CRC – Hamming code, Flow and Error Control, Noiseless Channels, Noisy Channels, HDLC, Point to Point Protocols.

Medium Access sub layer: ALOHA, CSMA/CD, LAN - Ethernet IEEE 802.3 - IEEE 802.4 - IEEE 802.5 - IEEE 802.11, Random access, Controlled access, Channalization, Collision Free Protocols

UNIT III

Network layer: Logical Addressing, Internetworking, Tunneling, Address mapping, ICMP, IGMP, Forwarding, Uni-Cast Routing Protocols, Multicast Routing Protocols, Congestion Control Mechanism

UNIT IV

Transport Layer: Process to Process Delivery, UDP and TCP protocols, SCTP, Data Traffic, Congestion, Congestion Control, QoS, Integrated Services, Differentiated Services,QoS in Switched Networks.

UNIT-V

Application Layer: Domain name space, DNS in internet, electronic mail, SMTP,, FTP, WWW, HTTP, SNMP, Network Security, Cryptography.

TEXT BOOKS

1. Data Communications and Networking – Behrouz A. Forouzan , Fourth Edition TMH,2006.
2. Computer Networks — Andrew S Tanenbaum, 4th Edition. Pearson Education/PHI.

REFERENCES

1. Data communications and computer Networks, P.C .Gupta, PHI.
2. An Engineering Approach to Computer Networks-S.Keshav, 2nd Edition, Pearson Education.
3. Understanding communications and Networks, 3rd Edition, W.A. Shay, Cengage Learning.
4. Computer Networking: A Top-Down Approach Featuring the Internet. James F. Kurose&Keith W. Ross,3rd Edition, Pearson Education.
5. Larry L.Peterson and Peter S. Davie, “Computer Networks”, Harcourt Asia Pvt. Ltd., Second Edition.
6. William Stallings, “Data and Computer Communication”, Sixth Edition, Pearson Education, 2000.

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III Year B.Tech CSE – I Sem	**L**	**T/P/D**	**C**
	3	**1**	**3**

(13CSE009) COMPILER DESIGN

Course Objectives:

1. Illustrating different phases of compilation.
2. Describe the steps and algorithms used by language translators and features.
3. Enumerating top down and bottom up parsing techniques used in compilation process.
4. Learning the effectiveness of optimization.
5. Introducing the syntax directed translation and type checking

Course Outcomes:

Upon successful completion of this course, students will be able to:

1. Know the major phases of compilation, particularly lexical analysis, parsing, semantic analysis and code generation.
2. Understand the differences types of parsing techniques and syntax directed translations.
3. Understand the code optimization methods..
4. Apply the optimization techniques to programming languages.
5. Know the language features and natural language representations.

UNIT–I

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

UNIT–II

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

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

UNIT–III

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

Symbol Tables: Symbol table format, organization for block structures languages, hashing, tree structures representation of scope information. Block structures and non

block structure storage allocation: static, Runtime stack and heap storage allocation, storage allocation for arrays, strings and records.

UNIT–IV

Code optimization: Consideration for Optimization, Scope of Optimization, local optimization, loop optimization, frequency reduction, folding, DAG representation. Data flow analysis: Flow graph, data flow equation, global optimization, redundant sub expression elimination, Induction variable elements, Live variable analysis, Copy propagation.

UNIT–V

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

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. Systems programming and operating systems – D.M Dhamdhere ,2nd edition,tata McGraw-hill publishing comp pvltd.

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.

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III Year B.Tech CSE – I Sem	**L**	**T/P/D**	**C**
	3	**1**	**3**

(13CSE010) PRINCIPLES OF PROGRAMMING LANGUAGES

Course Objectives

1. Compare programming languages and describe the main principles of imperative, functional, object oriented and logic oriented programming languages;
2. Recite the high points of programming language history; and
3. Read the central formalisms used in the description of programming languages.
4. Assess programming languages critically and in a scientific manner;
5. Analyze the principles of an imperative, functional, object oriented or logic oriented programming language

Course Outcomes :

Upon completion of the course, the students are expected to:

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

UNIT I Preliminary Concepts:

Reasons for studying, concepts of programming languages, Programming domains, Language Evaluation Criteria, influences on Language design,Language categories.

Programming Paradigms : Imperative, Object Oriented, functional Programming , Logic Programming. Programming Language Implementation – Compilation and Virtual Machines, programming environments.

UNIT II Syntax and Semantics:

General Problem of describing Syntax and Semantics, formal methods of describing syntax - BNF, EBNF for common programming languages features, parse trees, ambiguous grammars, attribute grammars, denotational semantics and axiomatic semantics for common programming language features.

UNIT III Data types:

Introduction, primitive, character, user defined, array, associative, record, union, pointer and reference types, design and implementation uses related to these types. Names, Variable, concept of binding, type checking, strong typing, type compatibility, named constants, variable initialization.

Expressions and Statements: Arithmetic relational and Boolean expressions, Short circuit evaluation mixed mode assignment, Assignment Statements, Control Structures – Statement Level, Compound Statements, Selection, Iteration, Unconditional Statements, guarded commands.

UNIT-IV Subprograms and Blocks:

Fundamentals of sub-programs, Scope and lifetime of variable, static and dynamic scope, Design issues of subprograms and operations, local referencing environments, parameter passing methods, overloaded sub-programs, generic sub-programs, parameters that are sub-program names, design issues for functions user defined overloaded operators, co routines.

Abstract Data types: Abstractions and encapsulation, introductions to data abstraction, design issues, language examples, C++ parameterized ADT, object oriented programming in small talk, C++, Java, C#, Ada 95 Concurrency: Subprogram level concurrency, semaphores, monitors, massage passing, Java threads, C# threads.

UNIT V Exception handling :

Exceptions, exception Propagation, Exception handler in Ada, C++ and Java. **Logic Programming Language :** Introduction and overview of logic programming, basic elements of prolog, application of logic programming.

Functional Programming Languages: Introduction, fundamentals of FPL, LISP, ML, Haskell, application of Functional Programming Languages and comparison of functional and imperative Languages.

TEXT BOOKS :

1. Concepts of Programming Languages Robert .W. Sebesta 6/e, Pearson Education.
2.. Programming Languages –Louden, Second Edition, Thomson.

REFERENCES :

1. Programming languages –Ghezzi, 3/e, John Wiley
2. Programming Languages Design and Implementation – Pratt and Zelkowitz, Fourth Edition PHI/Pearson Education
3. Programming languages –Watt, Wiley Dreamtech
4. LISP Patric Henry Winston and Paul Horn Pearson Education.
5. Programming in PROLOG Clocksin, Springer

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III Year B.Tech CSE –I Sem	**L**	**T/P/D**	**C**
	3	**1**	**3**

(13CSE014) ARTIFICIAL INTELLIGENCE & NEURAL NETWORKS

Course Objectives:

1. Introduction to Artificial Intelligence, Autonomous Agents
2. Problem solving, Search, Heuristic methods
3. State space Learning, CSP's, Game Playing
4. Fundamental concepts of neural networks and different network models
5. Biological Neuron, Comparison between brain and computer
6. Different Learning Laws, 7. Single Layer Perceptron's, 8. Multilayer Perceptron's

Course Outcomes :

Upon completion of this course, students should be able to:

1. Describe the key components of the artificial intelligence (AI) field
2. Describe the different types of Agents and Environments
3. Describe search strategies and solve problems by applying a suitable search method
4. Describe the relation between real brains and simple artificial neural network models.
5. Explain and contrast the most common architectures and learning algorithms
6. Describe Single Layer Perceptrons and Multi-Layer Perceptrons.

UNIT I

Introduction to AI – Foundations of AI – History of AI - Intelligent Agents – Agents and Environments – Nature of Environments – Structure of Agents – Problem solving Agents – Problem formulation – Example Problems

UNIT II

Search Techniques – Uninformed Search Strategies – Breadth first search – Depth first search – Depth limited search – Iterative deepening depth first search - Bi-directional search – comparison – Search with partial information - Heuristic search – Greedy best first search – A* search – Memory bounded heuristic search - Heuristic functions - Local search algorithms - Hill climbing – Simulated annealing search - Local beam search – Genetic algorithms

UNIT III

Constraint satisfaction problems – Backtracking search for CSP's - local search for constraint satisfaction problem.

Adversarial search – Games - Minimax algorithm - optimal decisions in multiplayer games - Alpha beta pruning - evaluation functions - cutting off search.

UNIT IV

What is a neural network, Human Brain, Models of a Neuron, Neural networks viewed as Directed Graphs, Network Architectures, Artificial Intelligence and Neural Networks. Learning Laws, Error Correction learning, Memory based learning, Hebbian learing, Competitive, Boltzmann learning.

UNIT V

Adaptive filtering problem, Unconstrained Organization Techniques, Linear least square filters, least mean square algorithm, Perceptron and its convergence theorem, Introduction to Multilayer Perceptron, Back propagation algorithm

TEXT BOOKS

1. Artificial Intelligence: A modern approach by Stuart Russell and Peter Norvig. 3rd Edition, Prentice Hall, 2010.
2. Fundamentals of new Artificial Intelligence (second edition) by Toshinori Munakata. Springer Second Edition.
3. Neural networks A comprehensive foundations, Simon Hhaykin, Pearson Education, 2"d Edition, 2004
4. Neural networks in Computer intelligence, Li Min Fu TMII2003

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III Year B.Tech CSE – I Sem	**L**	**T/P/D**	**C**
	0	**3**	**2**

(13ENG102) ADVANCED ENGLISH COMMUNICATION SKILLS LABORATORY

Introduction

This course aims to offer students a practical approach to Technical Writing, and provide a relevant, contemporary and authoritative introduction to the dynamic field of technical communication that prepares them for Workplace Communication. Each unit in the syllabus is devised so as to include a writing component as well as an oral component.

Course objectives:

1. enable the students to create clear, accurate, and succinct content to write business letters, resume, SOP, Proposals and Technical Reports for academics as well as for workplace
2. enable students to adjust technical content to meet the needs of a specific target audience
3. groom students to speak accurately and fluently and prepare them for real world activities through behavioral skills

Course Outcomes:

Upon completion of the course, the students are expected to:

1. summarize and synthesize information and produce technical writing that is required in academics as well as in the engineering profession
2. write covering letters, resume, SOP, Project Proposals and Technical Reports
3. speak fluently and address a large group of audience and participate in debates and discussions

Methodology

Writing Component

A Process- Genre methodology will be used in teaching the technical genres. This method would enable students to understand the use of particular lexico-grammatical patterns required of in the context of technical writing. They would learn to use language to express the particular communicative intent that is required of in the context of writing these genres.

Syllabus Outline

Unit I

Applications and Covering letters

1. Resume Writing
2. Verbal Ability: language, reading and listening, reasoning and analysis
3. Oral Communication :Talking About Yourself

Unit II

1. Writing an SOP
2. Summarizing and Synthesizing Information (Precis Writing)
3. Oral Communication: Making Presentations

Unit III

1. Writing Project Proposals
2. Oral Communication: Group Discussions

Unit IV

1. Writing Project Reports
2. Oral Communication: Interview Skills

Unit V

Behavioral Skills and Personality Development

1. Building a Positive Attitude, Building a Positive Personality, Motivation, Goal Setting & Values & Vision
2. Problem Solving and Decision Making; Negotiation Skills through Role Play
3. Team Building and Leadership Abilities
4. Social Etiquette

REQUIRED TEXT AND MATERIALS

1. Ashraf Rizvi, M (2005). Effective Technical Communication, Tata Mc Graw Hill Publishing Company Limited, New Delhi.
2. Anderson, Paul V. (2003). Reports. In Paul V. Anderson's Technical Communication: A Reader-Centered Approach (5th ed..) (pp. 457-473). Boston: Heinle.
3. William S. Pfeiffer, (2012) Technical Communication: A Practical Approach (7th ed.) Longman

REFERENCES

1. Burnett, Rebecca. Technical Communication. 5th Ed., Heinle, 2001.
2. Gerson Sharon J. and Steven Gerson : Technical Writing Process and Product. 3rd edition, New Jersey: Prentice Hall 1999
3. Markel, Mike**.** Technical Communication: Situations and Strategies (8th EDITION (2006-2007)
4. R. C. Sharma and K. Mohan, Business Correspondence and Report Writing, Third Edition, TMH, 2002. (Indian Edition)
5. M. Raman and S. Sharma, TechnicalCommunication : Principles and Practices, OUP, 2004. (Indian Edition)

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III Year B.Tech CSE – I Sem	**L**	**T/P/D**	**C**
	0	**3**	**2**

(13CSE105)OPERATING SYSTEMS & COMPUTER NETWORKS LAB

Course Objectives:

1. General understanding of structure of modern computers and Operating Systems.
2. Understanding the Purpose, structure and functions of operating systems
3. Illustration of key OS functions through C programming with examples
4. Introduce the concept of computer networks and its topologies to the students
5. Involve students in analytical studies of Computer Networks through C programming.

Course Outcomes:

Upon completion of the course, the students are expected to:

1. Identifying the working methodology of multithreaded applications
2. Determining the reasons of deadlocks, and their remedial measures in an operating system.
3. Learning the management of different type of memories techniques in the computer system.
4. Knowing the management of different type of memories techniques in the computer system.
1. Analyzing why networks need security and control, what errors might occur, and how to control network errors.

OPERATING SYSTEMS LAB

1. Simulate the following CPU scheduling algorithms
   a) Round Robin b) SJF c) FCFS d) Priority
2. Simulate the following algorithms
   a) Best fit b) worst fit c) first fit
3. Simulate the following file allocation strategies
   a) Sequential b) Indexed c) Linked
4. Simulate algorithms for deadlock avoidance and deadlock detection
5. Simulate the following page replacement algorithms
   a) FIFO b) Optimal c) LRU
6. Simulate the following disk scheduling algorithms
   a) FCFS b) SCAN c) CSCAN d) LOOK

COMPUTER NETWORKS LAB

7. Implement the data link layer framing methods such as character, character stuffing and bit stuffing.
8. Implement on a data set of characters the three CRC polynomials – CRC 12, CRC 16 and CRC CCIP.
9. Implement Dijkstra ‘s algorithm to compute the Shortest path thru a graph.
10. Take an example subnet graph with weights indicating delay between nodes. Now obtain Routing table at each node using distance vector routing algorithm
11. Take a 64 bit plain text and encrypt the same using DES algorithm.
12. Using RSA algorithm encrypt a text data and Decrypt the same.

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III Year B.Tech CSE – I Sem	**L**	**T/P/D**	**C**
	0	**3**	**2**

(13CSE106) COMPILER DESIGN & OOAD LAB

Course Objectives:

1. To provide an Understanding of the language translation peculiarities by designing complete translator for mini language.
2. To provide practical knowledge in automating the implementation of language translator.
3. The students will be able to understand the need of models in the software development process and the basic review of object-oriented concepts will be given.
4. The student will be able to understand the Unified Modeling Language principles and Learns fundamental process pattern for object-oriented analysis and design.
5. Learn how to derive analysis model from use case requirements.

Course Outcomes:

Upon completion of the course, the students are expected to:

1. Design and implement language processors in C/C++
2. Use tools (such as LEX and YACC) to automate parts of the implementation process.
3. Analyse the requirements through Use-Case View
4. Identify all structural and behavioral concepts of the entire system

Develop a model using UML concepts by different types of diagrams like Usecase Diagram,Class Diagram,Sequence Diagram etc.,

COMPILER DESIGN

Consider the following mini Language, a simple procedural high-level language, only operating on
integer
data, with a syntax looking vaguely like a simple C crossed with Pascal. The syntax of the language is
defined by the following BNF grammar:

<program> ::= <block>
<block> ::= { <variabledefinition><slist> }
| { <slist> }
<variabledefinition> ::= int <vardeflist> ;
<vardeflist> ::= <vardec> | <vardec> , <vardeflist>
<vardec> ::= <identifier> | <identifier> [<constant>]
<slist> ::= <statement> | <statement> ; <slist>

<statement> ::= <assignment> | <ifstatement> | <whilestatement>
| <block> | <printstatement> | <empty>
<assignment> ::= <identifier> = <expression>
| <identifier>[<expression>] = <expression>
<ifstatement> ::= if <bexpression> then <slist> else <slist> endif
| if<bexpression> then <slist> endif
<whilestatement> ::= while <bexpression> do <slist> enddo
<printstatement> ::= print (<expression>)
<expression> ::= <expression><addingop><term> | <term> | <addingop><term>
<bexpression> ::= <expression><relop><expression>
<relop> ::= < | <= | == | >= | > | !=
<addingop> ::= + | -
<term> ::= <term><multop><factor> | <factor>
<multop> ::= * | /
<factor> ::= <constant> | <identifier> | <identifier> [<expression>]
| (<expression>)
<constant> ::= <digit> | <digit><constant>
<identifier> ::= <identifier><letterordigit> | <letter>
<letterordigit> ::= <letter> | <digit>
<letter> ::= a|b|c|d|e|f|g|h|i|j|k|l|m|n|o|p|q|r|s|t|u|v|w|x|y|z
<digit> ::= 0|1|2|3|4|5|6|7|8|9
<empty> has the obvious meaning
Comments (zero or more characters enclosed between the standard C/Java-style comment brackets /
.../) can be inserted. The language has rudimentary support for 1-dimensional arrays. The declaration
int a[3] declares an array of three elements, referenced as a[0], a[1] and a[2]. Note also that you should
worry about the scoping of names.
A simple program written in this language is:

```
{ int a[3],t1,t2;
t1=2;
a[0]=1; a[1]=2; a[t1]=3;
t2=-(a[2]+t1*6)/(a[2]-t1);
if t2>5 then
print(t2);
else {
int t3;
t3=99;
t2=-25;
print(-t1+t2*t3); /* this is a comment
```

on 2 lines */
} endif }
Experiments on week wise:

Week 7

Design a Lexical analyzer for the above language. The lexical analyzer should ignore redundant spaces, tabs and newlines. It should also ignore comments. Although the syntax specification states that identifiers can be arbitrarily long, you may restrict the length to some reasonable value.

Week 8

Implement the lexical analyzer using JLex, flex or lex or other lexical analyzer generating tools.

Week 9

Design Predictive parser for the given language
Design LALR bottom up parser for the above language.

Week 10

Convert the BNF rules into Yacc form and Write code to generate abstract syntax tree.

Week 11

Write program to generate machine code from the abstract syntax tree generated by the parser

Week 12

Write a Yacc Program to construct a parse tree for the given grammar
Write a Lex program to construct a lexical analyzer

OBJECT ORIENTED ANALYSIS AND DESIGN LABORATORY

The student should take up the case studies of ATM system, Online Reservation System and Model it in different views i.e. Use case view, logical view, component view, Deployment view.

Week 1

Design a Use case Diagram for ATM system, Online Reservation System

Week 2

Design a Sequence Diagram for ATM system, Online Reservation System.
Design a Collaboration Diagram for ATM system, Online Reservation System.

Week 3

Design a Activity Diagram for ATM system, Online Reservation System.

Week 4

Design a State Chart Diagram for ATM system, Online Reservation System.

Week 5

Design a Class Diagram for ATM system, Online Reservation System.

Week 6

Design a Component Diagram for ATM system, Online Reservation System.
Design a Deployment Diagram for ATM system, Online Reservation System.

TEXT BOOKS

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

REFERENCES

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.

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III Year B.Tech CSE – II Sem	**L**	**T/P/D**	**C**
	4	**0**	**4**

(13ECE084) MICROPROCESSORS AND INTERFACING

Course Objectives:

1. To become familiar with various types of microprocessors and their programming.
2. To understand interfacing circuits necessary for various applications..
3. To learn various interfacing concepts.
4. To learn basic concepts of 80851 microcontroller.

Course Outcomes:

After going through this course the student will be able to

1. Gain extensive knowledge of various microprocessor and interfacing techniques.
2. Apply the programming techniques in developing the assembly language program for microprocessor applications.
3. Integration of hardware and software components.
4. Development of microprocessor and microcontroller based systems for embedded applications.

UNIT I

General definitions of mini computers, Microprocessors, Micro controllers, and Digital Signal Processors. Introduction to 8085 Microprocessor, Architecture of 8086 Microprocessor, Addressing modes of 8086, Instruction set of 8086.

UNIT II

Assembler directives, simple assembly language programs, procedures, and macros. Pin diagram of 8086-Minimum mode and maximum mode of operation, Memory and I/O organization of 8086.

UNIT III

8255 PPI – various modes of operation and interfacing to 8086, D/A and A/D converter to 8086 using 8255, memory interfacing to 8086.

UNIT IV

Serial Communication standards, serial data transfer schemes, 8251 USART architecture and interfacing, RS-232, IEEE 488 standards. Interrupt structure of 8086, Interrupt Vector Table, Need for 8259 Programmable Interrupt Controller.

UNIT V

Introduction to Microcontrollers, 8051 Microcontroller Architecture, I/O ports, memory organization, counters and Timers, Serial data Input/Output, Interrupts. Addressing modes, Instruction set of 8051, Simple programs.

TEXT BOOKS

1. Microprocessors and interfacing – Douglas V. Hall, TMH, 2nd Edition, 1999.
2. The 8051 microcontrollers and Embedded systems- Mazidi and mazidi, PHI, 2000.

REFERENCES

1. Micro computer systems, The 8086/8088 Family Architecture, Programming and Design – Y.Liu and G.A. Gibson, PHI, 2nd edition.
2. Advanced microprocessors and Peripherals – A.K.Ray and K.M.Bhurchandi, TMH, 2000.3. Micro Computer System 8086/8088 Family Architecture Programming and Design – By Liu and GA Gibson PHI, 2nd Edition
4. Microcontrollers and Applications, Ajay . V. Deshmukh, TMGH,2005.
5. The 8085 Microprocessor : Architecture Programming and Interfacing – K.Uday Kumar, B.S Umashankar, Pearson ,2008

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III Year B.Tech CSE – II Sem	**L**	**T/P/D**	**C**
	3	**1**	**3**

(13CSE013) CRYPTOGRAPHY & NETWORK SECURITY

Course Objectives:

1. Understand security concepts, Ethics in Network Security- tradeoffs inherent in security, basic categories of threats to computers and networks and Comprehend security services and mechanisms in the network protocol stack.
2. Describe various cryptosystems- symmetric key cryptography, public key cryptography.
3. Comprehend and apply authentication services and mechanisms, Generate and distribute a PGP key pair and use the PGP package to send an encrypted e-mail message.
4. Describe the enhancements made to IPv4 by IPSec, Understand the concepts of web security.
5. Discuss system security Issues- viruses, measures to counter them, Intrusion detection and Firewall Design Principles.

Course Outcomes:

Upon completion of this course, students should be able to:

1. Acquire knowledge in security issues, services, goals and mechanism of security, Understand mathematical foundation required for various cryptographic Algorithms.
2. Develop a security model to prevent, detect and recover from attacks, Encrypt and decrypt messages. Analyse a given system with respect to security of the system.
3. Sign and verify messages using well-known signature generation and verification algorithms.
4. Should be able to write code for relevant cryptographic algorithms, Should be able to write a secure access client for access to a server
5. Should be able to send and receive secure mails, Should be able to determine firewall requirements, and configure a firewall.

UNIT I

INTRODUCTION: Security Attacks, Services Mechanisms, A model for Internetwork security, Classical Encryption techniques, Fiestel Cipher Structure, Data Encryption Standard, Block Cipher Design Principles and Modes of Operation, Triple DES, IDEA, BLOWFISH, RC-4, Evaluation criteria for AES, AES Cipher, Placement of Encryption Function, Traffic Confidentiality.

UNIT II

PUBLIC KEY CRYPTOGRAPHY

Confidentiality using Symmetric Encryption – Principles of Public key Cryptosystems, RSA algorithm, Key Management, Diffie-Hellman key Exchange, Elliptic Curve Cryptography. Buffer overflow, TCP session hijacking, ARP attacks, route table modification, UDP hijacking and man-in-the-middle attacks.

UNIT III

AUTHENTICATION AND HASH FUNCTIONS

Authentication requirements, Authentication functions, Message Authentication Codes, Hash Functions, Security of Hash Functions and MACs, MD5 message Digest algorithm , Secure Hash Algorithm, RIPEMD, HMAC Digital Signatures, Authentication Protocols, Digital Signature Standard, Authentication Applications: Kerberos – X.509 Authentication Service

UNIT IV

NETWORK SECURITY: Email Security and Web Security

Electronic Mail Security – PGP/ SMIME, IP security- Architecture, Authentication Header, Encapsulating Security Payload, Key Management, Web Security- Secure Socket Layer, Transport Layer Security and Secure Electronic Transaction

UNIT V

SYSTEM LEVEL SECURITY

Intrusion detection – password management – Viruses and related Threats – Virus Counter measures – Firewall Design Principles – Trusted Systems.

TEXT BOOKS

1. William Stallings, “Cryptography And Network Security – Principles and Practices”, Prentice Hall of India, Fourth Edition, 2005.
2. Bruce Schneier, “Applied Cryptography”, John Wiley & Sons Inc, 2001

REFERENCES

1. Charles B. Pfleeger, Shari Lawrence Pfleeger, “Security in Computing”, Third Edition, Pearson Education, 2003
2. Atul Kahate, “Cryptography and Network Security”, Tata McGraw-Hill, 2003.
3. “Hack Proofing your network” by Ryan Russell, Dan Kaminsky, Rain Forest, Puppy, Joe Grand, DavidAhmad, Hal Flynn Ido Dubrawsky, Steve W.Manzuik and Ryan Permeh, wiley Dreamtech
4. Cryptography: Theory and Practice by Douglas R. Stinson, CRC press, hardcover, Published March, 1995. ISBN 0-8493-8521-0
5. Network Security Essentials: Applications and Standards by William Stallings.Prentice Hall, Hardcover, Published November 1999, 366 pages, ISBN 0130160938.

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III Year B.Tech CSE – II Sem	**L**	**T/P/D**	**C**
	3	**1**	**3**

(13ITD019) MOBILE COMPUTING

Course Objectives:

1. Identify the necessity of wireless communication.
2. Understand the layered protocol architecture of wireless network.
3. Recognize the different types of WLANs and Define GSM and its evolution from telecommunication to wireless communication.
4. Understand Wireless Medium Access Control Protocols and Differentiate the network and transport protocols used in wired and wireless networks.
5. Define Database Issues and Data Dissemination and Synchronization and Understand the different Routing Protocols used in MANETs.

Course Outcomes:

Upon completion of this course, students should be able to:

1. Learn the different wireless communication technologies, understand the protocols used in the layered architecture
2. Define WLAN and different WLAN transmission technologies
3. Explain different types of WLANs, learn about GSM
4. Explain different Wireless Medium Access Control Protocols, explain Mobile Network and Transport Layer Protocols
5. Explain database issues and data dissemination and synchronization methods
6. Explain different routing algorithms used in Mobile Ad hoc Networks(MANET).

UNIT I

Introduction to Mobile Communications and Computing:

Mobile Computing (MC) : Introduction to MC, Novel applications, Limitations, and Architecture.

GSM: Mobile services, System architecture, Radio interface, Protocols, Localization and calling, Handover, Security, and New data services.

UNIT II

(Wireless) Medium Access Control (MAC): Motivation for a Specialized MAC (Hidden and Exposed Terminals, Near and Far Terminals), SDMA, FDMA, TDMA, CDMA, MAC Protocols for GSM.

UNIT III

Mobile IP Network Layer: Mobile IP (Goals, assumptions, entities and terminology, IP packet delivery, agent advertisement and discovery, registration, tunneling and encapsulation, optimizations), Dynamic Host Configuration Protocol (DHCP).

UNIT IV

Mobile Transport Layer: Traditional TCP, Indirect TCP, Snooping TCP, Mobile TCP, Fast retransmit/fast recovery, Transmission/ time-out freezing, Selective retransmission, Transaction oriented TCP.

UNIT V

Database Issues: Hoarding techniques, caching invalidation mechanisms.

Data Dissemination: Communications asymmetry, classification of new data delivery mechanisms, push based mechanisms, pull-based mechanisms, hybrid mechanisms, selective tuning (indexing) techniques.

TEXT BOOKS

1. "Handbook of Wireless Networks and Mobile Computing", Stojmenovic and Cacute, Wiley, 2002,
2. "Mobile Communications", Jochen Schiller, Addison-Wesley, Second Edition, 2004

REFERENCES

1. "Mobile Computing Principles: Designing and Developing Mobile Applications with UML and XML", Reza Behravanfar, Cambridge University Press, Oct2004.
2. "Mobile Computing", Raj Kamal, Oxford University Press ,2007
3. "Mobile and Wireless Design Essentials", Martyn Mallick, Wiley DreamTech, 2003.
4. "Principles of Mobile Computing", Hansmann, Merk, Nicklous, Stober, 2nd edition Springer 2003.

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III Year B.Tech CSE – II Sem	**L**	**T/P/D**	**C**
	3	**1**	**3**

(13CSE015) COMPUTER GRAPHICS AND ANIMATION

Course Objectives:

1. Analyze the various primitives pertaining to graphics
2. Employ the different kinds of 2D transformation techniques
3. Use certain techniques to view the objects.
4. understand 3D transformation and viewing
5. Know the animation design sequences.

Course Outcomes:

Upon completion of the course, the students are expected to:

1. Apply the various basic algorithms to draw the object
2. construct the 2D objects using transformations
3. Demonstrate the representations of 3D objects
4. apply the various techniques to eliminate hidden surfaces of 3D object
5. Create animation sequences of an object

UNIT I

INTRODUCTION

Introduction: Usage of Graphics and their applications, Presentation Graphics-Computer Aided Design- Computer Art- Entertainment- Education and Training-Visualization- Image Processing- Graphical User Interfaces

Over view of Graphics systems: Video Display Devices- Raster Scan systems-random scan systems-Graphics monitors and workstations-Input devices-hard copy devices-Graphics software

Output primitives: Points and Lines-Line Drawing Algorithms- Loading the Frame buffer- Line function- Circle- Generating Algorithms- Ellipse Generating Algorithms-Other Curves- Parallel Curve Algorithms-Curve Functions-Pixel Addressing- Filled Area Primitives-Filled Area Functions- Cell Array- Character Generation

Attributes of Output Primitives: Line and Curve Attributes-Color and Gray scale levels-Area Fill Attributes- Character Attributes-Bundled Attributes- Inquiry Functions-Ant aliasing

UNIT II

TWO DIMENSIONAL GEOMETRICALTRANSFORMATION AND VIEWING

Two dimensional geometric transformations - Matrix representations and homogeneous coordinates, composite transformations; Two dimensional viewing - viewing pipeline, viewing coordinate reference frame; widow-to-viewport coordinate transformation, Cohen -Sutherland-and Cyrus-beck line clipping algorithms,Southerland-Hodgeman polygon clipping algorithm.

UNIT III

THREE DIMENSIONAL OBJECT REPRESENTATION

Three dimensional concepts; Three dimensional object representations - Polygon surfaces - Polygon tables - Plane equations - Polygon meshes; Curved Lines and surfaces, Quadratic surfaces; Blobby objects; Spline representations - Bezier curves and surfaces - B-Spline curves and surfaces

UNIT IV

THREE DIMENSIONAL GEOMETRICAL TRANSFORMATION AND VIEWING

Three dimensional geometric and modeling transformations - Translation, Rotation, Scaling, composite transformations; Three dimensional viewing - viewing pipeline, viewing coordinates, Projections, Clipping; Visible surface detection methods: Depth buffer, scan line, Depth sorting, BSP-tree methods, Area sud-division and octree methods

UNIT V

COMPUTER ANIMATION

Design of Animation Sequence, General computer Animation functions, Raster animation, Computer animation languages, key frame systems, motion specifications

TEXT BOOKS

1. Donald Hearn & M. Pauline Baker, "Computer Graphics", Pearson Education, 2nd Edition, 2003
2. “Computer graphics principles &practice”, second edition in c, foley, VanDam, Feiner and Hughes, Pearson Education
3. Computer Graphics Peter Shirley & Steve Marschner Indian Edition CENGAGE Learning.
4. Computer Graphics C Version by Donald Hearn & M. Pauline Baker, Pearson Education, New Delhi, 2004

REFERENCES

1. “Procedural elements for Computer Graphics”, David Rogers, Tata McGraw hill,2nd edition
2. “Computer Graphics”, Steven Harington, TMH
3. “Principles of interactive Computer Graphics” Neuman and sproul,TMH

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III Year B.Tech CSE – II Sem	**L**	**T/P/D**	**C**
	3	**1**	**3**

(13ITD010) LINUX PROGRAMMING

Course Objectives:

1. Understand basic principles of Linux programming
2. To familiarize students with the Linux environment
3. To learn the fundamentals of shell scripting/programming
4. To familiarize students with basic linux administration

Course Outcomes:

Upon completion of this course, students should be able to:

1. Understand the how to work with Linux commands
2. Understand the how to write Shell Scrips
3. Learn various System Calls in linux
4. Become familiar with Write shell scripts to automate various tasks

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, using system commands in awk. **Working with the Bourne again shell(bash):** Introduction, shell responsibilities, pipes and input Redirection, output redirection, 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

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

UNIT-III

Process – Process concept, Kernel support for process, process attributes, process control - process creation, waiting for a process, process termination, zombie process, orphan process, Process APIs. 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, Pipes, FIFOs, Introduction to three types of IPC-message queues, semaphores and shared memory. Message Queues-Kernel support for messages, Unix system V APIs for messages, client/server example.

Semaphores-Kernel support for semaphores, Unix system V APIs for semaphores. Shared Memory- Kernel support for shared memory, Unix system V APIs for shared memory, semaphore and shared memory example.

UNIT-V

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

Text Books:

1. Unix System Programming using C++, T.Chan, PHI.
2. Unix Concepts and Applications, 4th Edition, Sumitabha Das, TMH,2006.
3. Beginning Linux Programming, 4th Edition, N.Matthew, R.Stones,Wrox, Wiley India Edition,rp-2008

References:

1. Linux System Programming, Robert Love, O'Reilly, SPD.
2. Advanced Programming in the Unix environment, 2nd Edition, W.R.Stevens, Pearson Education.
3. Unix Network Programming ,W.R.Stevens,PHI.
4. Unix for programmers and users, 3rd Edition, Graham Glass, King Ables, Pearson Education

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III Year B.Tech CSE – II Sem	**L**	**T/P/D**	**C**
	3	**0**	**3**

(13CED037) DISASTER MANAGEMENT
(Open Elective)

Course Objectives:

1. Understand the difference between a hazard and disaster
2. Know about various disasters and their impacts
3. Understand Different approaches of disaster risk reduction
4. Understand Disaster risks in India

Course Outcomes:

On successful completion of this course, it is expected that students should be able to

1. Acquire the knowledge disaster Management
2. Understand the vulnerability of ecosystem and infrastructure due to a disaster
3. Acquire the knowledge of Disaster Management Phases
4. Understand the hazard and vulnerability profile of India

UNIT-1

Introduction to disaster

Concepts and definitions (Disaster, Hazard, Vulnerability, Resilience, Risks)

UNIT-II

Disasters: Classifications, Causes, Impacts (including social, economic, political, environment, health, psychosocial, etc.)

Differential impacts-in terms of caste, class, gender, age, location, disability Global trends in disasters. Urban disaster, pandemics, complex emergencies, Climate change

UNIT-III

Approaches to disaster Risk reduction

Disaster cycle-its analysis, phase, Culture of safety, prevention, mitigation and preparedness, community based DRR, Structural measures, roles and responsibilities of community. Panchayati Raj Institutions/Urban Local Bodies (PRIs/ULBs), states, center and other stake-holders.

UNIT-IV

Inter-relationship between Disaster and Development Factors affecting Vulnerabilities, differential impacts, impact of development projects such as dams, embankments, change in land-use etc. Climate change Adaption. Relevance of indigenous knowledge, appropriate technology and local resources.

UNIT-V

Disaster Risk Management in India

Hazard and vulnerability profile of India

Components of Disaster relief: Water, food, sanitation, shelter, health, waste management Institutional arrangements (Mitigation, Response and Preparedness, DM Act Policy, Other related polices, plan, programmes and legislation)

Project Work :(Field Work, Case Studies)

The project/fieldwork is meant for students to understand vulnerabilities and to work on reducing disaster risks and to build a culture of safety. Projects must be conceived creatively based on the geographic location and hazard.

Suggested Reading list:

1. Alexander David, Introduction in 'Confronting Catastrophe', oxford University press, 2000
2. Andharia J. Vulnerability in disaster Discourse, JTCDM, Tata Institute of Social Sciences working paper no.8, 2008
3. Blaikie, P, Cannon T, Davis I, Wisner B 1997. At Risk Natural Hazards, Peoples' Vulnerability and Disaster, Rutledge.
4. Coppola P Damon, 2007. Introduction to International Disaster Management.
5. Carter, Nick 1991.Disaster Management: A Disaster Manager's Handbook. Asian Development Bank, Manila Philippines.
6. Cuny,F.1983. Development and Disasters, Oxford University Press
7. Govt.of India; Disaster Management Act 2005,Government of India, New Delhi.

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III Year B.Tech CSE – II Sem	**L**	**T/P/D**	**C**
	3	**0**	**3**

(13ITD011) GREEN IT
(Open Elective)

Course Objectives:

1. Learn concepts of Trends and which has led to go green.
2. Identify and implement environmentally sound techniques to preserve power.
3. To analyse different techniques and technologies that will enhance Green IT initiatives And to create Data centre Design & Redesign
4. To understand the purpose and application of virtualization technology.
5. To Know about Data Replication methods and Disk Technology Advancements.

Course Outcomes:

Upon completion of this course, students should be able to:

1. To Know the global green mantra is “Reduce, Reuse, Recycle.”.
2. To Illustrate the importance of managing the E-waste.
3. To know how to Minimizing Power Issues, Cooling, Changing the way we work.
4. Understand concepts of Greening Process to redesign green Datacentre.
5. To Recognize the need for virtual server implementation & desktop virtualization. And understands about Data Replication and Disk Technology Advancements

Unit I

Trends and Reasons to Go Green:

Overview and Issues, Problems, Cost savings, Current Initiatives and standards, Global Initiatives

Unit II

Consumption Issues

Minimizing Power Issues, Cooling, Changing the way we work, Going Paper less, Recycling, Hardware Considerations,

Unit III

The Greening Process

Data Center Design and Redesign, Greening your Information Systems, Staying Green

Unit IV

Virtualization

Virtual Server Implementation Plan, Desktop Virtualization, Benefits, Desktop access, Virtual Printing,

Unit V

Data Replication and Disk Technology Advancements

Data Replication Methods, Disk Technology Advancements, The Green data Center, Cloud Computing, Remote Monitoring

TEXTBOOKS

1. Green IT-Reduce your information system's Environmental Impact while adding to the bottom line Toby J Velte, Anthony T Velte, Robert Elsenpeter – McGrahill Publications, 2008
2. Foundation Of Green It, Consolidation, Virtualization, Efficiency, And Roi In The Data Center, Marty Poniatowski- Prentice Hall Publications

REFERENCES

1. Green Computing and Green IT Best Practices on Regulations and Industry Initiatives, Virtualization, Power Management, Materials Recycling and Telecommuting By Jason Harris.
2. Green IT for Sustainable Business Practice- Mark G. O' Neil, BCS The chartered institute for IT
3. The Greening of IT: How Companies Can Make a Difference for the Environment, John P. Lamb, Kindle Edition, IBM Press 2009

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III Year B.Tech CSE – IISem	**L**	**T/P/D**	**C**
	3	**0**	**3**

(13EEE015) RENEWABLE ENERGY SOURCES
(Open Elective)

Course Objectives:

1. To inculcate the awareness of energy conservation in students
2. To understand the use of renewable energy sources for electrical power generation
3. To know different energy storage methods
4. To learn about environmental effects of energy conversion

Course Outcomes:

Upon the completion of this subject, the student will be able

1. To use different renewable energy sources to produce electrical power
2. To minimize the use of conventional energy sources to produce electrical energy
3. To identify the fact that the conventional energy resources are depleted
4. To store energy and to avoid the environmental pollution

UNIT- I

PRINCIPLES OF SOLAR RADIATION

Role and Potential of New and Renewable source, the solar energy option, Environmental impact of solar power, Physics of the Sun, The solar constant, Extraterrestrial and Terrestrial solar radiation, Solar radiation on titled surface, Instruments for measuring solar radiation and sun shine, solar radiation data.

UNIT- II

SOLAR ENERGY COLLECTION & APPLICATIONS

Flat Plate Collectors and Concentrating Collectors, Classification of concentrating collectors, Orientation and Thermal analysis, advanced collectors, Solar ponds, Solar Energy Applications - solar heating/cooling techniques, solar distillation and drying, Photovoltaic Energy Conversion.

UNIT- III

WIND ENERGY

Sources and potentials, Horizontal and Vertical axis wind mills - Types, Blade Design, Performance characteristics, Betz criteria, Induction Generators for Wind power Generation, MHD Generation.

UNIT - IV

BIO-MASS & DEC

Principles of Bio-Conversion, Anaerobic/aerobic digestion, Types of Bio-gas Digesters, gas yield, Combustion characteristics of bio-gas, Utilization for cooking, Economic aspects. Direct Energy Conversion, Need for DEC, Principles of DEC, Carnot Cycle and Limitations.

UNIT - V

HARNESSING GEOTHERMAL ENERGY & OCEAN ENERGY

Resources of Geothermal Energy, Types of wells, Methods of harnessing the energy, potential in India, Ocean Thermal Energy Conversion, Principles, Utilization, Setting of OTEC plants, Thermodynamic cycles, Tidal and Wave energy: Potential and Conversion Techniques, Mini-Hydel Power plants.

TEXT BOOKS

1. Non-Conventional Energy Sources by G.D.Rai, Khanna Publishers.
2. Renewable Energy Resources by Twidell and Wier, CRC Press (Taylor and Francis).
3. Non- Conventional energy resources by B.H.Khan, Tata Mc Graw-Hill, 2006.

REFERENCE BOOKS

1. Renewable Energy Resources by Tiwari and Ghosal, Narosa.
2. Renewable Energy Technologies by Ramesh and Kumar, Narosa.
3. Non-Conventional Energy Systems by K Mittal, Wheeler Publishing House.
4. Renewable Energy Sources and Emerging Technologies by D.P.Kothari, K.C.Singhal, PHI.

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III Year B.Tech CSE – II Sem	**L**	**T/P/D**	**C**
	3	**0**	**3**

(13CSE016) INTELLECTUAL PROPERTY RIGHTS
(Open Elective)

Course Objectives:

1. To make students familiar with Intellectual Property Rights.
2. To understand innovations in engineering and other domains.
3. To be familiar with patents, copyrights and various acts related to innovations.

Course Outcomes:

Upon completion of the course, the students are expected to:

1. To define various terms related to Intellectual Property Rights.
2. To understand the process of patent, copyrights and related procedures.
3. To analyse the situation of IPR in the Indian context with that of global scenario.
4. To understand the patenting process through various case studies.

UNIT I

Introduction – Invention and Creativity – Intellectual Property (IP) – Importance – Protection of IPR – Basic types of property i. Movable Property ii. Immovable Property and iii. Intellectual Property.

UNIT II

IP – Patents – Copyrights and related rights – Trade Marks and rights arising from Trademark registration – Definitions – Industrial Designs and Integrated circuits – Protection of Geographical Indications at national and International levels – Application Procedures..

UNIT III

International convention relating to Intellectual Property – Establishment of WIPO – Mission and Activities – History – General Agreement on Trade and Tariff (GATT).

UNIT IV

Indian Position Vs WTO and Strategies – Indian IPR legislations – commitments to WTO-Patent Ordinance and the Bill – Draft of a national Intellectual Property Policy – Present against unfair competition.

UNIT V

Case Studies on – Patents (Basumati rice, turmeric, Neem, etc.) – Copyright and related rights – Trade Marks – Industrial design and Integrated circuits – Geographic indications – Protection against unfair competition.

TEXT BOOKS

- Subbaram N.R. “Handbook of Indian Patent Law and Practice “, S. Viswanathan Printers and Publishers Pvt. Ltd., 1998.

REFERENCES

- P. Narayanan; Law of Copyright and Industrial Designs; Eastern law House, Delhi, 2010
- Prabhuddha Ganguli: ‘ Intellectual Property Rights” Tata Mc-Graw –Hill, New Delhi
- M.Ashok Kumar and Mohd.Iqbal Ali: “Intellectual Property Right” Serials Pub.

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

(13AED010) MODERN AUTOMOBILE TECHNOLOGIES

(Open Elective)

COURSE PREREQUISITES: Physics, Basic Electrical Engineering.

COURSE OBJECTIVES:

1. Understand the basics of Automobile Engineering without any previous knowledge regarding Automobiles.
2. Understand the difference between IC engine Vehicle and HEV/EV.
3. Appreciate the current technologies in the Automobile industry

COURSE OUTCOMES:

Student should be able to

1. Apply fundamental knowledge of Automobile Engineering for design of Safety systems like AIRBAGS,ABS etc.,.
2. Apply fundamental knowledge of Automobile Engineering for design of Comfort systems like Power steering, Collapsible and tiltable steering column, and power windows. etc.,.
3. Gain the knowledge of HEV/EVs and their trouble shooting.

UNIT-I:

INTRODUCTION:

Basic layout of an automobile with reference to power plant, power required for propulsion, various resistances to motion of the automobile, Types of tyres, Basic steering systems, Brakes, Necessity of brake, Two and Three wheelers: Classification of two and three wheelers.

UNIT-II:

ELECTRIC VEHICLES:

Layout of an electric vehicle, performance of electric vehicles – traction motor haracteristics, tractive effort, transmission requirements.

UNIT-III:

HYBRID VEHICLES:

Concepts of hybrid electric drive train, types, architecture of series and parallel hybrid electric drive train, merits and demerits, series and parallel hybrid electric drive train design.

UNIT-IV:

SAFETY SYSTEMS:

Airbags, seat belt tightening system, collision warning systems, child lock, anti - lock braking systems, anti - spin regulation, traction control systems.

TELEMATICS:

Global positioning systems, geographical information systems, navigation systems, automotive vision system, road recognition, driver assistance systems.

UNIT-V:

SECURITY SYSTEMS:

Anti theft technologies, smart card system, number plate coding.

COMFORT SYSTEMS:

Active suspension systems, requirement and characteristics, different types, power steering, collapsible and tiltable steering column, power windows.

TEXT BOOKS:

1. "Modern Electric, Hybrid Electric and Fuel Cell Vehicles Fundamentals, Theory and Design", Mehrdad Ehsani, Yimin Gao, sebastien E. Gay and Ali Emadi: CRS Press, 2004.

REFERENCES:

1. "Automotive Hand Book" Robert Bosch, SAE, 5th edition, 2000.
2. "Intelligent Vehicle Technologies", Ljubo Vlacic, Michel Parent and Fumio Harashima, Butterworth-Heinemann publications, Oxford, 2001.
3. "Navigation and Intelligent Transportation Systems – Progress in Technology", Ronald K Jurgen, Automotive Electronics Series, SAE, USA, 1998.

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III Year B.Tech CSE – II Sem	**L**	**T/P/D**	**C**
	0	**3**	**2**

(13CSE107) COMPUTER GRAPHICS AND ANIMATION LABORATORY

Course objectives:

1. Generate the basic primitive algorithms in Computer graphics
2. Develop the clipping algorithms
3. Outline the animation using transformations
4. Create smooth surfaces and curves
5. Apply the morphing techniques on 2D and 3D 0bjects

Course Outcomes:

On completion of the course, the student should:

1. Develop the various line drawing algorithms
2. Experience the animation techniques on 2D and 3D objects
3. Construct the Spline curves and Bezier curves.
4. Use the 2D and 3D transformation techniques to transform the object
5. Design objects with help of OpenGL routines.

EXPERIMENTS:

1. a. Drawing lines using DDA, Bresenham's Algorithms.
   b. Drawing Circle using Bresenham's Algorithm.
   c. Drawing Ellipse using Bresenham's Algorithm.
2. a. Creating various types of text and fonts.
   b. Creating two dimensional objects using the lines and curves (Circle, Ellipse…..).
3. a. Animating the two dimensional pictures using transformations.
   b. Coloring the picture and Zooming.
4. a. Rotation, scaling and translating the 3D objects.
   b. Coloring the 2D & 3D objects.
5. a. Creating smooth surfaces and Curves.
   b. Creating an object and applying animation of key framing.

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III Year B.Tech CSE – II Sem	**L**	**T/P/D**	**C**
	0	**3**	**2**

(13CSE112) LINUX PROGRAMMING LABORATORY

Course Objectives:

1. Understand basic principles of Linux programming
2. To familiarize students with the Linux environment
3. To learn the fundamentals of shell scripting/programming
4. To familiarize students with basic linux administration

Course Outcomes:

Upon completion of this course, students should be able to:

1. Understand the how to work with Linux commands [PO: j,l]
2. Understand the how to write Shell Scrips [PO: c, j]
3. Learn various System Calls in linux [PO: c, e, h, j, k]
4. Become familiar with Write shell scripts to automate various tasks [PO: f, h, j,l]

List of Experiments

1. Basic Linux Commands File handling utilities, Security by file permissions, Process utilities, Disk utilities, sed, awk, grep.
2. Write a shell script that accepts a file name, starting and ending line numbers as arguments and displays all the lines between the given line numbers.
3. Write a shell script that deletes all lines containing a specified word in one or more files supplied as arguments to it.
4. Write a shell script that displays a list of all the files in the current directory to which the user has read, write and execute permissions.
5. C programming examples using Linux Operating systems.
6. Write a shell script that receives any number of file names as arguments checks if every argument supplied is a file or a directory and reports accordingly. Whenever the argument is a file, the number of lines on it is also reported.
7. Write a shell script that accepts a list of file names as its arguments, counts and reports theoccurrence of each word that is present in the first argument file on other argument files.
8. Write a shell script to list all of the directory files in a directory.
9. Write a shell script to find factorial of a given integer.
10. Write an awk script to count the number of lines in a file that do not contain vowels.
11. Write an awk script to find the number of characters, words and lines in a file.
12. Implement in C the following Unix commands using System calls
    a)Cat b) mv

13. Write a C program to emulate the Unix ls – l command.
14. Write a C program on zombie process
15. Write a C program that illustrates the following.

a) Creating a message queue.
b) Writing to a message queue.
c) Reading from a message queue.

16. Write a C program that illustrates file locking using semaphores.

Text Books:

1. Unix System Programming using C++, T.Chan, PHI.
2. Unix Concepts and Applications, 4th Edition, Sumitabha Das, TMH,2006.
3. Beginning Linux Programming, 4th Edition, N.Matthew, R.Stones,Wrox, Wiley India Edition,rp-2008

References:

1. Linux System Programming, Robert Love, O'Reilly, SPD.
2. Advanced Programming in the Unix environment, 2nd Edition, W.R.Stevens, Pearson Education.
3. Unix Network Programming ,W.R.Stevens,PHI.
4. Unix for programmers and users, 3rd Edition, Graham Glass, King Ables, Pearson Education.

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III Year B.Tech CSE – II Sem	**L**	**T/P/D**	**C**
	0	**3**	**2**

(13ECE178) MICROPROCESSORS AND INTERFACING LABORATORY

Course Objectives:

1. To learn fundamental programming skills in Assembly language.
2. To program 8086 processor to perform various tasks.
3. To interface various devices to 8086 processor.
4. To design and implement simple microprocessor based embedded systems.

Course Outcomes:

After going through this course the student will be able to

1. To design a system component or process to meet desired needs.
2. To use techniques, skills and modern engineering tools.
3. To program microprocessor/microcontroller based systems using Assembly language.
4. To implement a working prototype of their project.

I. Microprocessor 8086

1. Introduction to MASM
2. Arithmetic operations – Multi byte addition and subtraction, multiplication and division-signed and unsigned arithmetic operation, ASCII-arithmetic operation.
3. Logical operations- Shift and rotate- converting packed BCD to unpacked BCD, BCD to ASCII conversion.
4. By using string operation and instruction prefix: block transfer, reverse string, sorting, inserting, deleting, length of the string, string comparison.
5. DOS programming: Reading keyboard (Buffered with and without echo)- Display characters, strings.

II. Interfacing

6. Interface DAC with 8086 to generate square wave using PPI
7. Interface DAC with 8086 to generate sinusoidal wave using PPI
8. Interface DAC with 8086 to generate triangular wave using PPI
9. Interface DAC with 8086 to generate stair case wave using PPI
10. Convert analog data to digital data using ADC through 8255 PPI.
11. Parallel communication between two 8086 microprocessors.
12. Interface an 8086 microprocessor trainer kit to PC and establish a communication between them through RS 232.

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IV Year B.Tech CSE – I Sem	**L**	**T/P/D**	**C**
	4	**0**	**4**

(13ITD012) WEB TECHNOLOGIES

Course Objectives:

1. Giving the students the insights of the Internet programming and how to design and implement complete applications over the web.
2. It covers the notions of Web servers and Web Application Servers, Design Methodologies with concentration on Object-Oriented concepts, Client-Side
3. Programming, Server-Side Programming, Active Server Pages, Database Connectivity to web applications, Adding Dynamic content to web applications,
4. Programming Common Gateway Interfaces, Programming the User Interface for the web applications.
5. It also concentrates on the usage of recent platforms used in developing web applications such as the .Net environment like C#, XML, and ASP.Net.

Course Outcomes:

Upon completion of this course, students should be able to:

1. Analyze a web page and identify its elements and attributes.
2. Create web pages using XHTML and Cascading Styles sheets.
3. Build dynamic web pages using JavaScript (client side programming). .
4. Create XML documents.
5. Create XML Schema.
6. Build and consume web services.

UNIT I

HTML Common tags: List, Tables, images, forms, Frames; Cascading Style sheets.Introduction to Java Scripts, Objects in Java Script, Dynamic HTML with Java Script.

UNIT II

Introduction to XML: Document type definition, XML Schemas, Document Object model, Presenting XML, Using XML **Processors:** DOM and SAX.

Java Beans: Introduction to Java Beans, Advantages of Java Beans, BDK Introspection, Using Bound properties, Bean Info Interface, Constrained properties Persistence, Customizes, Java Beans API, Introduction to EJB's.

UNIT III

Web Servers and Servlets: Tomcat web server, Installing the Java Software Development Kit, Tomcat Server & Testing Tomcat, Introduction to Servelets: Lifecycle of a Serverlet, JSDK, The Servelet API, The javax.servelet Package, Reading Servelet

parameters, Reading Initialization parameters. The javax.servelet HTTP package, Handling Http Request & Responses, Using Cookies-Session Tracking, Security Issues.

UNIT IV

Database Access: Database Programming using JDBC, JDBC drivers,Studying Javax.sql.* package, Accessing a Database from a Servelet.

Introduction to JSP: The Problem with Servelet. The Anatomy of a JSP Page, JSP Processing. JSP Application Design with MVC Setting Up and JSP Environment.

UNIT V

JSP Application Development: Generating Dynamic Content, Using Scripting Elements Implicit JSP Objects, Conditional Processing : Displaying Values Using an Expression to Set an Attribute, Declaring Variables and Methods Error Handling and Debugging Sharing Data Between JSP pages, Requests, and Users Passing Control and Date between Pages – Sharing Session and Application Data – Memory Usage Considerations, Accessing a Database from a JSP page, Deploying JAVA Beans in a JSP Page, Introduction to struts framework.

TEXT BOOKS

1. Web Programming, building internet applications, Chris Bates 2nd edition, WILEY Dreamtech (UNIT s 1, 2)
2. Core SERVLETS ANDJAVASERVER PAGES VOLUME 1: CORE TECHNOLOGIES By Marty Hall and Larry Brown Pearson (UNITs 3,4,5)

REFERENCES

1. Programming world wide web-Sebesta,Pearson
2. Internet and World Wide Web – How to program by Dietel and Nieto PHI/Pearson Education Asia.
3. Jakarta Struts Cookbook , Bill Siggelkow, S P D O'Reilly.
4. Java : The complete Reference, 7th Edition by Herbert Schildt. TMH.

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IV Year B.Tech CSE – I Sem	**L**	**T/P/D**	**C**
	3	**1**	**3**

(13CSE017) DATA WAREHOUSING AND MINING

Course Objectives:

1. To introduce the basic concepts and techniques of Data Warehousing & Mining.
2. Apply preprocessing statistical methods for any given raw data.
3. To develop skills of using recent data mining software for solving practical problems
4. Implement and apply basic algorithms for supervised and unsupervised learning
5. Explore efficient and cost effective methods for maintaining datawarehouse systems

Course Outcomes:

Upon completion of the course, the students are expected to:

1. Apply database analysis and design techniques to the concept of Data Warehousing.
2. Construct a data model for a case sample Data Warehouse project.
3. List and describe the core components of a Data Mart.
4. Summarize the rational and key benefits of using Data Marts and Construct a data model representing a Data Mart strategy.
5. Evaluate different models used for OLAP and data preprocessing

UNIT I:

Introduction: Fundamentals of data mining, KDD process, Data Mining Functionalities, Classification of Data Mining systems, Data Mining Task primitives, Integration of a Data mining System with a Database or a Data warehouse systems, Major issues in Data Mining.

Data Preprocessing: Needs for Preprocessing the Data, Data Cleaning, Data Integration and Transformation, Data Reduction, Discretization and Concept Hierarchy Generation.

UNIT II:

Data Warehouse and OLAP Technology for Data Mining: Data Warehouse, Multidimensional Data Model, Data Warehouse Architecture, Data Warehouse Implementation, From Data Warehousing to Data Mining.

Data Cube computation and Data Generalization: Efficient Methods for Data Cube Computation, Further Development of data cube and OLAP Technology, Characterization and Discrimination:Attribute-Oriented Induction.

UNIT – III

Mining Frequent, Associations and Correlations: Basic Concepts, Frequent Itemset mining methods, Mining Multilevel Association Rules from Transaction Databases, Mining Multidimensional Association Rules from Relational Databases and Data Warehouses, From Association Mining to Correlation Analysis, Constraint-Based Association Mining.

UNIT – IV

Classification and Prediction: Issues Regarding Classification and Prediction, Classification by Decision Tree Induction, Bayesian Classification, Classification by Back propagation, Classification Based on Concepts from Association Rule Mining, Other Classification Methods, Prediction, Classifier Accuracy.

UNIT – V

Cluster Analysis Introduction: Types of Data in Cluster Analysis, A Categorization of Major Clustering Methods, Partitioning Methods, Density-Based Methods, Grid-Based Methods, Model-Based Clustering Methods, Outlier Analysis.

Mining Complex Types of Data: Mining Spatial Databases, Mining Multimedia Databases, Mining Time-Series and Sequence Data, Mining Text Databases, Mining the World Wide Web.

TEXT BOOKS:

1. Data mining: Concepts and Techniques, Jiawei Han and Micheline Kamber, 2nd Edition, Elsevier, 2006.

REFERENCES:

1. Introduction to data mining, Pang-Ning Tan, Michael Steinbach, Vipin Kumar, Addison-Wesley, 2005. ISBN : 0321321367.
2. Mining Introductory and advanced topics –MARGARET H DUNHAM, PEARSON EDUCATION
3. Lecture Notes on Data Mining, Micheal W.Berry, Murray Browne, World Scientific Publishing Co
4. Data Mining Techniques – ARUN K PUJARI, University Press.
5. Data Mining for Association Rules and Sequential Patterns: Sequential and Parallel Algorithms, Jean-Marc Adamo, ISBN: 0387950486
6. The Data Warehouse Life cycle Tool kit – RALPH KIMBALL WILEY STUDENT EDITION.
7. Data Warehousing in the Real World – SAM ANAHORY & DENNIS MURRAY. Pearson Edn Asia.

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IV Year B.Tech CSE – I Sem	**L**	**T/P/D**	**C**
	4	**0**	**4**

(13CMS002) MANAGEMENT SCIENCE

Course Prerequisites: Business Economics and Financial Analysis

Course Objectives:

The objective of this course is to:

1. Understand the principles, functions, theories and practices of different management areas and to provide them with practical exposure to cases of success/failure in business.
2. Expose with a systematic and critical understanding of organizational theory, structures and design.
3. Comprehend conceptual models of strategic management and to familiarize with the tools of operations and project management.
4. Understand the role of human relations in the management of operations and to provide basic insights into contemporary management practices.

Course Outcomes:

Upon completion of this course students should be able to:

1. Function effectively in multidisciplinary teams to accomplish a common goal of organizations.
2. Apply theories to improve the practice of management.
3. Appreciate the management challenges associated with high levels of change in the organizations.
4. Develop global vision and management skills at both a strategic level and interpersonal level.

UNIT-I

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, System and Contingency approach to management, Planning: Meaning – Significance – Types of Plans – Decision making & Steps in Decision making Process, Leadership Styles, Social responsibilities of Management.

Organizing: Meaning – Features –process of organization – Principles of organization - Elements of organizations – Organization chart – span of control (Graicunas Formulae), Centralisation and Decentralisation, Types of mechanistic and organic structures of organisation (Line organization, Line and staff organization, functional organization, Committee organization, matrix organization, Virtual Organisation,

Cellular Organisation, team structure, boundaryless organization, inverted pyramid structure, lean and flat organization structure) and their merits, demerits and suitability.

UNIT-II

Human Resources Management : Concepts of HRM, Basic functions of HR Manager: Human Resource Planning(definition, objectives and process), Recruitment(definition, sources and techniques), Selection (definition & process), induction and orientation, Training and Development(definition, need and methods),employee exit process, employee relations management, employee compensation and benefits administration, Job Evaluation(objectives, process & methods) and performance appraisals (objectives, process &methods)

UNIT-III

Strategic Management : Mission, Goals, Objectives, Policy, Strategy, Programmes, Elements of Corporate Planning Process, Environmental Scanning, Value Chain Analysis, BCG Matrix, SWOT Analysis, Steps in Strategy Formulation and Implementation, Generic Strategy alternatives, balance score card, Capability Maturity Model (CMM)/People capability maturity model (PCMM).

UNIT-IV

Operations Management: Plant location, Types of Plant Layout-Methods of production (Job, batch and Mass Production), Work Study -Basic procedure involved in Method Study and Work Measurement

Materials Management: Objectives, Need for Inventory control, EOQ, ABC Analysis, Purchase Procedure, value analysis, JIT, six sigma, TQM, supply chain management, Stores Management and Stores Records.

Marketing: Functions of Marketing, Marketing Mix, and Marketing Strategies based on Product Life Cycle, Channels of distribution

UNIT-V

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)

TEXT BOOKS:

1. Management Science, Aryasri TMH,2009
2. Management, Stoner, Freeman, Gilbert, 6th Ed, Pearson Education, New Delhi, 2004
3. Principles and Practice Management - L.M.Prasad, Sultan chand Publications, New Delh

REFERENCE BOOKS:

1. Principles of Marketing", Kotler Philip, Garyarmstrong, Prafullay. Agnihotri, EU Haque, 2010, 13TH Ed, Pearson Education Prentice Hall of India.
2. Human Resource Management", Michael Armstrong, 2010, Kogan Page.
3. Quantitative Techniques in Management" N.D.Vohra, 2010, 4th Ed, TMH
4. Operations Management", Mahadevan. B, 2010, Pearson Education.
5. Strategic Management", V.S.P. Rao and V., Hari Krishna, 2010, Text and Cases, Excel Books, New Delhi.

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IV Year B.Tech CSE – I Sem	**L**	**T/P/D**	**C**
	3	**0**	**3**

(13ITD079) MOBILE APPLICATION DEVELOPMENT
(Elective I)

Course Objectives:

1. Mobile Application Development course exposes the students to essentials of mobile apps development.
2. The core modules of this subject include designing, developing, testing, signing, packaging and distributing high quality mobile apps.
3. This course aims to teach mobile app development using Android as the development platform.

Course Outcomes:

Upon completion of this course, student shall be able to:

1. Appreciate the Mobility landscape
2. Familiarize with Mobile apps development aspects
3. Design and develop mobile apps, using Android as development platform, with key focus on user experience design, native data handling and background tasks and notifications.
4. Perform testing, signing, packaging and distribution of mobile apps

UNIT I

Introduction to Mobile A brief history of Mobile, The Mobile Ecosystem, Why Mobile?, Types of Mobile Applications, Mobile Information Architecture, Mobile Design, Mobile 2.0, Mobile Web development, Small Computing Device Requirements.

J2ME Overview The World of Java, Inside J2ME, J2ME Architecture, MIDlet Programming, J2ME Wireless Toolkit, Hello World J2ME Style, Multiple MIDlets in a MIDlet Suite

UNIT II

Introduction to Android

History of Android, Introduction to Android Operating Systems, Android Development Tools, Android Architecture.

UNIT III

Development Tools

Installing and using Eclipse with ADT plug-in, Installing Virtual machine for Android sandwich/Jelly bean (Emulator), configuring the installed tools, creating a android project –

Hello Word, run on emulator, Deploy it on USB-connected Android device.

UNIT IV

User Interface Architecture

Application context, intents, Activity life cycle, multiple screen sizes

User Interface Design

Form widgets, Text Fields, Layouts, Button control, toggle buttons, Spinners(Combo boxes),Images, Menu, Dialog.

UNIT V

Database

Understanding of SQLite database, Connecting with the database.

TEXTBOOKS:

- J2ME: The Complete Reference, James Keogh, Tata McGrawHill
- 1. Android application development for java programmers. By James C. Sheusi. Publisher: Cengage Learning, 2013.
- Lauren Darcey and Shane Conder, “Android Wireless Application Development”, Pearson Education, 2nd ed. (2011)

REFERENCE BOOKS:

- Reto Meier, “Professional Android 2 Application Development”, Wiley India Pvt Ltd
- Mark L Murphy, “Beginning Android”, Wiley India Pvt Ltd
- Sayed Y Hashimi and Satya Komatineni, “Pro Android”, Wiley India Pvt Ltd
- devloper.android.com (web)
- Android Application Development All in one for Dummies by Barry Burd, Edition: I
- Teach Yourself Android Application Development In 24 Hours, Edition:I, Publication: SAMS

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IV Year B.Tech CSE – I Sem	**L**	**T/P/D**	**C**
	3	**0**	**3**

(13CSE031) SCRIPTING LANGUAGES

(Elective-I)

Course Objectives

1. Relevant program capabilities are embedded in the learning outcomes for this course. In meeting these learning outcomes you will gain or improve your capabilities in:
2. Enabling Knowledge: effectively apply knowledge of Perl, Python, PHP and TCL/Tk to new situations and learn from the experience.
3. The main objective of this advanced course is assisting Perl programmer or database administrator to compile large programming set. Other tasks include implementing complex data structure, compiling object-oriented programming.
4. Incorporate PHP into HTML files, Write basic PHP scripts, Process form input, Write and use functions. The advanced PHP training course further develops the skills of experienced PHP Programmers by introducing them to advanced techniques, tools, and methodologies that can be used to build complex, scaleable, PHP applications.
5. The goal of this course is to teach students the skills required to write Taylor Control Language (TCL) sequences using fundamental and advanced language features.

Course Outcomes :

1. Students will also learn to develop, maintain, and scale the performance of web sites using Smarty templates.
2. Student able to identify database and environment modifications to use TCL.
3. Develop, debug, test, and execute sequences using the Editor and Runtime Console Support.
4. Develop TCL sequences that:
   Perform process control calculations, manipulate arrays, and access recipes.
5. Monitor and access functional elements and access/modify sequence parameters.
6. Tk is a platform-independent GUI framework developed for Tcl. From a Tcl shell (tclsh), Tk may be invoked using this command: package requires Tk.

Unit I

Introduction to PERI.and Scripting

Scripts and Programs, Origin of Scripting, Scripting Today, Characteristics of 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, advance 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.

Unit II

PHP Basics

PHP Basics- Features Embedding PHP Code in your Web pages, Outputting the data to the browser, Data types, Variables, Constants, expressions, string interpolation, control structures . Function, Creating a Function, Function Libraries, Arrays, strings and Regular Expressions.

Unit III

Advanced PHP Programming

Php and Web Forms, Files, PHI3 Authentication and Methodologies -Hard Coded, File Based, Database Based, IP Based, Login Administration, Uploading Files with PHI3, Sending Email using PHP, PHI3Encryption Functions, the Merypt package, Building Web sites for the World - Translating Websites- Updating Web sites Scripts, Creating the Localization Repository, Translating Files, text. Generate Binary Files, Set the desired language within your scripts. Localizing Dates, Numbers and Times.

Unit IV

TCL-Tk

TCL Structure, syntax, Variables and Data in TCL, Control Flow, Data Structures, input/output, procedures, strings, patterns, files, Advance TCL- eval, source, exec and up level commands, Name spaces, trapping errors, Event driven programs, making applications internet aware, Nuts and Bolts Internet Programming, Security Issues, C Interface. Tk-Visual Tool Kits, Fundamental Concepts of Tk, Tk by example, Events and Binding , Perl-Tk.

Unit V

Python

Introduction to Python language, python-syntax,statements,functions,Built-in-functions and Methods, Modules in python, Exception Handling, Integrated Web Applications in Python - Building Small, Efficient Python Web Systems ,Web Application Framework.

TEXT BOOKS:

1. The World of Scripting Languages, David Barren, Wiley Publications.
   Python Web Programming, Steve Holden and David Beazley, New Riders Publications. Beginning PHI3 and MySQL, 3rd Edition, Jason Gilmore, press Publications (Dream tech.).

REFERENCE BOOKS:

1. Open Source Web Development with LAMP using Linux, Apache, MySQL, Perl and PHPJ.Lee and B.Ware (Addison Wesley) Pearson Education.
2. Programming Python, M.Lutz,SPD.
3. PUP 6 Fast and Easy Web Development Julie Meloni and Matt Telles, Cengage Learning Publication
4. PUP 5.1 J.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'Reiily,SPD.
9. Tel and the Tk Tool kit, Ousterhout,) person Education.
10. PUP and MySQL by Example, E.Quigley, Prcntice Hall (Pearson).
11. Perl Power, J.P.Flynt, Cengage Learning.
12. PI IP Programming solutions, V.Vaswani, TMH.

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IV Year B.Tech CSE – I Sem	**L**	**T/P/D**	**C**
	3	**0**	**3**

(13CSE018)GAMING ENGINEERING
(Elective-I)

Course Objectives:

1. Mastery of event-based programming
2. Mastery of resource management as it relates to rendering time, including level-of-detail and culling.
3. Familiarity with the various components in a game or game engine.
4. Familiarity with leading open source game engine components.
5. Familiarity of game physics. And Familiarity with game animation.
6. Exposure to processing real world problems on GPU.

Course Outcomes:

Upon completion of this course student will be able to:

1. Understand all game development problems and issues, such as story creation, character control, scene management, selection of programming language, mathematical analysis, physical analysis, graphics, multimedia, artificial intelligence, and others.
2. Describe the hardware and software components of a gaming system.
3. Design and build a single-user 2D and 3D game.
4. Design and build a multi-user PC or Mobile game
5. Solve complex logic problems using the tools and techniques found in Computer Science, Software Engineering, and Game Programming.

UNIT I

Introduction to Game Programming

History of Computer Games, Game design principles and architecture, Game design process, Basic Structure of a Game ,Using XNA and working with Xbox 360, Structure of an XNA application , Installing XNA and opening your first XNA project, Working with XNA's Sprite Manager ,Component programming, C# vs. Java .

UNIT II

2-D Game Design

Rendering 2D images to the screen, Scaling, rotating and positioning 2D images, Keyboard input, Playing sound effects in XNA, Per-pixel texture manipulations, Random terrain slope generation, Alpha blending, Collision detection, And even a complete 2D particle engine for the explosions.

UNIT III

3-D Game Design

Effect file, First triangle: defining points, displaying them using XNA, World space: defining points in 3D space, defining camera position, Rotation & translation, Indices, Terrain basics, Terrain from file, reading user input on the keyboard, Adding colors, Lighting basics, Terrain lighting.

UNIT IV

3-D Game Programming Using HLSL

Graphics Processing Unit (GPU), Running a game on GPU, HLSL introduction, Vertex format, Vertex shader, Pixel shader, Per-pixel colors, Textured triangle, Triangle strip, World transform, World normals, Per-pixel lighting, Shadow map, Render to texture, Projective texturing, Real shadow, Shaping the light, Preshaders.

UNIT V

Case Studies

Creating a Shooters (2-D) game and Creating a Flight Sim(3-D) game.

Text Book:

1. XNA 3.0 Game Programming Recipes: A Problem-Solution Approach, Riemer Grootjans, A Press, 2009.

REFERENCES

1. Beginning XNA 3.0 Game Programming: From Novice to Professional, Alexandre Santos Lobao, Bruno Pereira Evangelista, Antonio Leal de Farias , Riemer Grootjans, A Press, 2009.
2. Learning XNA 4.0: Game Development for the PC, Xbox 360, and Windows Phone 7, Aaron Reed, O'Reilly, 2011.
3. Microsoft XNA Game Studio Creator's Guide, Second Edition, Stephen Cawood and Pat McGee, Mc. Graw Hill, New York, 2009.
4. http://www.riemers.net/eng/Tutorials/xnacsharp.php

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	3	**0**	**3**

(13CSE012) CYBER SECURITY
(Elective-I)

Course Objectives

1. This course provides an overview of Information Security and Assurance over the Internet.
2. Students will be exposed to the spectrum of security activities, methods, methodologies, and procedures with emphasis on practical aspects of Information Security
3. In this course Service Processes, storage and security management, Cyber Forensics and standard, laws and Acts for Information Security will be learnt

Course Outcomes

Upon completion of this course, students should be able to:

1. Understand security principles, threats and attack techniques
2. Describe authentication and access control
3. Describe reference monitors, and security models
4. Understand Service Delivery and support process and Understand network security and operating system security
5. Understand storage and security management and Understand Cyber forensics and use tools for imaging and recovery
6. Understand various information security, laws and standards

UNIT I.

INTRODUCTION: Introduction and Overview of Cyber Crime, Nature and Scope of Cyber Crime, Types of Cyber Crime: Social Engineering, Categories of Cyber Crime, Property Cyber Crime. CYBER CRIME ISSUES: Unauthorized Access to Computers, Computer Intrusions, White collar Crimes, Viruses and Malicious Code, Internet Hacking and Cracking, Virus Attacks, Pornography, Software Piracy, Intellectual Property, Mail Bombs, Exploitation ,Stalking and Obscenity in Internet, Digital laws and legislation, Law Enforcement Roles and Responses.Security Policy Design, Designing Security Procedures, Risk Assessment Techniques, Security standards, Biba Model, Chinese wall, Bell La Pedula Model.

UNIT II:

SERVICE DELIVERY PROCESS- Service Delivery Process, Service Level Management, Financial Management, Service Management, Capacity Management, Availability Management.

SERVICE SUPPORT PROCESS- Service Support Process, Configuration Management, Incident Management, Problem Management, Change Management, Release Management.

UNIT III:

STORAGE MANAGEMENT- Backup & Storage, Archive & Retrieve, Disaster Recovery, Space Management, Database & Application Protection, Bare Machine Recovery, Data Retention

SECURITY MANAGEMENT- Security, Computer and internet Security, Physical Security,Identity Management, Access Management. Intrusion Detection, Security Information Management.

UNIT IV:

Cyber Forensics- Introduction to Digital Forensics, Forensic Software and Hardware, Analysis and Advanced Tools, Forensic Technology and Practices, Forensic Ballistics and Photography, Face, Iris and Fingerprint Recognition, Audio Video Analysis, Windows System Forensics, Linux System Forensics, Network Forensics Evaluation of crime scene and evidence collection ,Usage of tools for disk imaging and recovery processes.

UNIT V

Introduction to Information Security Standards , Laws and Acts: Laws and Ethics, Digital Evidence Controls, Evidence Handling Procedures, Basics of Indian Evidence ACT IPC and CrPC , Electronic Communication Privacy ACT, Legal Policies,ISO 27001,PCI DSS,IT Act, Copy Right Act.

Textbooks:

1. Nelson Phillips and Enfinger Steuart, “Computer Forensics and Investigations”, Cengage Learning, New Delhi, 2009.
2. "Management of Information Security", M. E. Whitman, H. J. Mattord, Nelson Education / CENGAGE Learning, 2011, 3rd Edition.
3. "Guide to Computer Forensics and Investigations", B. Nelson, A. Phillips, F. Enfinger, C. Steuart, Nelson Education / CENGAGE Learning, 2010, 4th Edition.
4. Goel Ritendra, Computer Application in Management, New Age International Publishers, New Delhi.
5. Chowdhury G.G., Text Retrieval Systems in information Management, New Age International Publishers, New Delhi.

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(13ECE013)DIGITAL IMAGE PROCESSING
(Elective-I)

Course Objectives

1. Able to acquire and represent the image in spatial domain.
2. Able to transform images from spatial to frequency domains.
3. To introduce students to a large variety of processing techniques of practical interest related to recent developments in Digital image processing

Course Outcomes

After going through this course the student will be able to

1. Apply to current technologies and issues that are specific to image processing systems.
2. Leverage the student's knowledge of image processing to a practical system.
3. Compress the Digital image which is required for storage and transmission of digital images.

UNIT I

Fundamentals of Image Processing: Digital Image Fundamentals, Basic steps of Image Processing System, Sampling and Quantization of an image, relationship between pixels, Imaging Geometry.

Image Transforms: 2 D- Discrete Fourier Transform, Discrete Cosine Transform (DCT), Haar Transform, Hadmard Transform, Hotelling Transform and slant transform.

UNIT II

Image Enhancement: Spatial domain methods: Histogram processing, Fundamentals of Spatial filtering, Smoothing spatial filters, Sharpening spatial filters.

Frequency domain methods: Basics of filtering in frequency domain, image smoothing, image sharpening, Selective filtering.

UNIT III

Image Segmentation: Segmentation concepts, Point, Line and Edge Detection, Edge Linking using Hough Transform, Thresholding, Region Based segmentation.

Wavelet based Image Processing: Introduction to wavelet Transform, Continuous wavelet Transform, Discrete wavelet Transform, Filter banks, Wavelet based image compression

UNIT IV

Image Compression: Image compression fundamentals - Coding Redundancy, Spatial and Temporal redundancy, Compression models: Lossy and Lossless, Huffman

coding, Arithmetic coding, LZW coding, Run length coding, Bit plane coding, Transform coding, Predictive coding, JPEG Standards.

UNIT V

Image Restoration: Image Restoration Degradation model, Algebraic approach to restoration, Inverse Filtering, Least Mean square filters.

Morphological Image Processing: Dilation and Erosion, Opening and closing, the hit or miss Transformation, Overview of Digital Image Watermarking Methods

TEXT BOOKS

1. Digital Image Processing- Rafael C. Gonzalez and Richard E.Woods, 3rd Edition, Pearson, 2008.
2. Digital Image Processing- S.Jayaraman, S Esakkirajan, T Veerakumar, TMH, 2010.

REFERENCES

1. Digital Image Processing-William K.Pratt, 3rd Edition, John Willey, 2004.
2. Fundamentals of Digital Image Processing-A.K.Jain, PHI, 1989.
3. Digital Image Processing using MATLAB - Rafael C. Gonzalez, Richard E.Woods and Steven L.Edding 2nd, TMH. 2010.
4. Digital Image Processing and Computer Vision – Somka, Hlavac, Boyl, Cengage Learning, 2008.
5. Introduction to image Processing and Analysis – John C. Russ, J. Christian Russ, CRC Press, 2010

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	3	**0**	**3**

(13CSE011) ADVANCED COMPUTER ARCHITECTURE
(Elective-II)

Course Objectives:

1. know the classes of computers, and new trends and developments in computer architecture
2. Understand pipelining, instruction set architectures, memory addressing.
3. Understand the various techniques to enhance a processors ability to exploit Instruction-level parallelism (ILP), and its challenges.
4. Understand symmetric shared-memory architectures and their performance, several advanced optimizations to achieve cache performance.
5. Understand storage systems, RAID, I/O performance, and reliability measures.

Course Outcomes:

Upon completion of the course, the students are expected to:

1. Describe the principles of computer design.
2. Classify instruction set architectures.
3. Analyze the operation of performance enhancements such as pipelines,caches, shared memory.
4. Describe modern architectures such as RISC, VLIW (very large instruction word) and multi-cpu systems.
5. Compare the performance of different architectures

UNIT -I

Fundamentals of Computer design- Technology trends- cost price and their trends- measuring and reporting performance - quantitative principles of computer design.

UNIT –II

Instruction set principles and examples- Classifying instruction set architecture - memory addressing- type and size of operands- operations in the instruction set- instructions for control flow- encoding an instruction set.

UNIT –III

Instruction level parallelism (ILP)and its dynamic exploitation – Concepts and challenges-overcoming data hazards- reducing branch costs with dynamic hardware prediction – high performance instruction delivery- hardware based speculation

ILP software approach- compiler techniques- static branch protection - VLIW approach - H.W support for more ILP at compile time.

UNIT –IV

Memory hierarchy design- Cache performance- reducing cache misses penalty and miss rate – virtual memory.

Multiprocessors and thread level parallelism- symmetric shared memory architectures- distributed shared memory- Synchronization- multi threading

UNIT –V

Storage systems - Types – Buses - RAID- errors and failures - designing an I/O system in five easypieces.Inter connection networks and clusters - interconnection network media – practical issues in interconnecting networks – clusters- designing a cluster

TEXT BOOKS:

1. Computer Architecture A quantitative approach 3rd edition John L. Hennessy & David A. Patterson Morgan Kufmann (An Imprint of Elsevier)

REFERENCES BOOKS:

1. "Computer Architecture and parallel Processing" Kai Hwang and A.Briggs International Edition McGraw-Hill.
2. Advanced Computer Architectures, DezsoSima, Terence Fountain, Peter Kacsuk, Pearson.

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	3	**0**	**3**

(13CSE020)BUILDING ENTERPRISE APPLICATIONS
(Elective-II)

Course Objectives:

1. Expose the data model in a web application with a rich ADF Faces user interface
2. Define the Enterprise Architect's roles, responsibilities and deliverables.
3. Identify non-functional requirements (NFRs) and describe common problems and solutions.
4. Translate business requirements into an architecture.
5. How to weigh choices in architecting the client, web, business, integration and data tiers.
6. Apply various evaluation criteria to choosing architectural elements and patterns, tools, servers and frameworks.

Course Outcomes:

Upon completion of this course, student should be able to get Knowledge and Understanding about

1. Student knows different strategies and technologies for developing cross platform, distributed, object-oriented applications in Java
2. Student should discuss issues involved in building robust e-business systems in Java
3. Student knows about the Enterprise Java applications developed using the architecture as a guideline can accommodate rapid change and growth. By taking this course, you'll understand the technical context of the Java EE and relevant technologies.
4. Student knows about various security threats and mechanisms.

UNIT-I

Introduction: Challenges of Enterprise Application Development, The Platform for Enterprise Solutions, J2EE Application Scenarios: Multitier Application Scenario, Stand-Alone Client Scenario, Web-Centric Application Scenario, Business-to-Business Scenario, MVC Architecture

J2EE Platform Technologies: Component Technologies, Platform Roles and Services, Service Technologies, Communication technologies.

UNIT –II

Client Tier: Requirements and constraints- Operating Environment, Deployment, Web clients-protocols, Content format, types of web clients, EJB Clients, Enterprise

information system clients

Web Tier: Web Applications and Web Containers, Dynamic content creation, Internationalization and Localization, Application Designs, Application Migration

Unit –III

Enterprise Java beans Tier: Business Logic, Enterprise Beans as J2EE Business Objects, Session Beans, and Design Guidelines

Enterprise Information System Tier: Enterprise Information System Capabilities and Limitations.

Enterprise Information System Integration Scenarios, Relational Database Management System Access,

Application Component Provider Tasks, Application Programming Model.

Unit –IV

Transaction Management : Properties of Transactions, J2EE Platform Transactions, Scenarios,JTA Transactions ,Transactions in Applets and Application Clients ,Transactions in Web Components ,Transactions in Enterprise Information systems

Unit –V

Security : Security Threats and Mechanisms, Authentication-Protection ,Authentication Mechanisms , Authentication Call Patterns , Auto-Registration, Exposing Authentication Boundaries with References , Authorization ,Protecting Messages-Integrity Mechanisms, Confidentiality Mechanisms , Identifying Sensitive Components ,Ensuring Confidentiality of Web Resources

Text Books :

1. Designing Enterprise Applications with the JavaTM 2 Platform, Enterprise Edition , Nicholas Kassem and the Enterprise Team Version

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(13CSE029)ADVANCED DATA BASES
(Elective-II)

Course Objectives:

1. Introducing Distributed Database Management System and its Design issues
2. Exploring several algorithms for processing queries and be able to use them
3. Describe the methods to translate complex conceptual data models into logical and Physical database designs
4. Demonstrating query optimization and its algorithms
5. Enumerating the concepts behind distributed transaction processing

Course Outcomes :

Upon successful completion of this course, students should be able to:

1. Understand the role of a distributed database management system in an Enterprise/organization.
2. Design queries against a distributed database management system
3. Apply the principles of query optimization to a database schema
4. Understand the concept of a database transaction and related database facilities, including concurrency control, backup and recovery, and data object locking and protocols.
5. Explain the various types of locking mechanisms utilized within database management systems.
6. Explain the different types of database failures as well as the methods used to recover from these failures

UNIT-1

Introduction; Distributed Data Processing, Distributed Database System, Promises of DDBSs,
Problem areas.
Overview of Relational DBMS: Relational Database Concepts, Normalization, Integrity rules,
Relational data languages.

UNIT-II

Distributed DBMS Architecture: Architectural Models for Distributed DBMS, DDMBS Architecture.
Distributed Database Design: Alternative Design Strategies, Distribution Design issues,
Fragmentation, Allocation.

UNIT-III

Query Processing and decomposition: Query Processing Objectives, Characterization of query
processors, layers of query processing, query decomposition, Localization of distributed data.

UNIT-IV

Distributed query Optimization: Query optimization, centralized query optimization, Distributed query optimization algorithms.

UNIT-V

Transaction Management: Definition, properties of transaction, types of transactions.

Distributed concurrency control: Serializability, concurrency control Mechanisms & Algorithms,

Time stamped & Optimistic concurrency control Algorithms, Deadlock Management.

Text Books:

1. M.Tamer OZSU and Patuck Valduriez: Principles of Distributed Database Systems, Pearson Edn. Asia, 2001.
2. Stefano Ceri and Willipse Pelagatti: Distributed Databases, McGraw Hill.

Reference Books:

1. Henry F Korth, A Silberchatz and Sudershan : Database System Concepts, MGH
2. Raghuramakrishnan and Johhanes Gehrke: Database Management Systems,MGH

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	3	**0**	**3**

(13ITD021) CLOUD COMPUTING
(Elective-II)

Course Objectives:

At the end of the course, student will be able to appreciate the cloud computing paradigm, recognize its various forms and able to implement some cloud computing features.

1. At the end of the course, student will be able to appreciate the cloud computing paradigm, recognize its various forms and able to implement some cloud computing features.
2. Get a clear understanding of Cloud Computing Fundamentals and its importance to various organizations.
3. Master the concepts of IaaS, PaaS, SaaS, Public and Private clouds.
4. Understand AWS and learn to develop applications in AWS.

Course Outcomes:

Upon completion of this course, students should be able to:

1. Articulate the main concepts, key technologies, strengths, and limitations of cloud computing and the possible applications for state-of-the-art cloud computing
2. Identify the architecture and infrastructure of cloud computing, including SaaS, PaaS, IaaS, public cloud, private cloud, hybrid cloud, etc.
3. Explain the core issues of cloud computing such as security, privacy, and interoperability.
4. Collaboratively research and write a research paper, and present the research online. Knowledge of Governance of Cloud Computing.

UNIT I

UNDERSTANDING CLOUD COMPUTING

Cloud Computing – History of Cloud Computing – Cloud Architecture – Cloud Storage –Why Cloud Computing Matters – Advantages of Cloud Computing – Disadvantages of Cloud Computing – Companies in the Cloud Today – Cloud Services

UNIT II

DEVELOPING CLOUD SERVICES

Web-Based Application – Pros and Cons of Cloud Service Development – Types of Cloud Service Development – Software as a Service – Platform as a Service – Web

Services – On-Demand Computing – Discovering Cloud Services Development Services and Tools – Amazon Ec2 – Google App Engine – IBM Clouds

UNIT III

CLOUD COMPUTING SECURITY ARCHITECTURE

Cloud security fundamentals-Vulnerability assessment tool for cloud- Privacy and Security in cloud

Cloud computing security architecture: Architectural Considerations- General Issues- Trusted Cloud computing- Secure Execution Environments and Communications- Micro-architectures; Identity Management and Access control Identity management- Access control, Autonomic Security

UNIT IV

CLOUD COMPUTING FOR EVERYONE

Centralizing Email Communications – Collaborating on Schedules – Collaborating on To-Do Lists – Collaborating Contact Lists – Cloud Computing for the Community – Collaborating on Group Projects and Events – Cloud Computing for the Corporation

UNIT V

CLOUD COMPUTING CASE STUDIES

Cloud computing case studies: Google App Engine – IBM Clouds –Windows live – Micro soft dynamic CRM- Salesforce.com CRM- App Exchange – Amazon S3 – Oracle OBIEE

TEXT BOOKS:

1. Cloud Computing: Implementation, Management and Security, John W. Rittinghouse, James F.Ransome, CRC Press, rp2012.
2. Cloud Computing a practical approach by Anthony T.Velte, Toby J Velte Robert Elsenpeter, TMH 2010

REFERENCES

1. Michael Miller, Cloud Computing: Web-Based Applications That Change the Way You Work and Collaborate Online, Que Publishing, August 2008.
2. Haley Beard, Cloud Computing Best Practices for Managing and Measuring Processes for On-demand Computing, Applications and Data Centers in the Cloud with SLAs, Emereo Pty Limited, July 2008.
3. Gautam Shroff, Enterprise Cloud Computing: Technology, Architecture, applications, Cambridge University Press, 2010.
4. Ronald Krutz Russell Dean Vines, Cloud Security

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IV Year B.Tech CSE – I Sem	**L**	**T/P/D**	**C**
	3	**0**	**3**

(13ECE081) VLSI SYSTEM DESIGN
(Elective-II)

Course Objectives:

1. To learn the various fabrication steps of IC and come across basic electrical properties of MOSFET.
2. To study the concepts of stick diagrams and layouts with the knowledge of MOS layers through design rules.
3. To study gate level design of subsystems and integrated circuits.
4. To learn basic circuit concepts and scaling of MOS transitors.

Course Outcomes

Upon completion of the course, the students are expected to:

1. Understand the various fabrication processes for different FET transitors.
2. Design the basic combinational circuits using stick and layout diagrams.
3. Learn the elecrical properties and circuit concepts of MOS transistors.
4. Design the systems using subsytems design process.

UNIT I

Review of microelectronics and Introduction to MOS technology: Introduction to IC technology: Fabrication process:Oxidation,Diffusion,Lithography,Ion Implantation and Metallisation. Introduction to MOS and related VLSI technology – NMOS-CMOS-BICMOS Technologies used in VLSI circuits.

UNIT II

BASIC ELECTRICAL PROPERTIES: Basic Electrical Properties of MOS, CMOS and BiCMOS Circuits:

I_{Ds} –V_{Ds} relationships, MOS transistor threshold Voltage, gm, gds, figure of merit w_o, Pass transistor, NMOS inverter, CMOS Inverter

UNIT III

VLSI Circuit Design Process: VLSI Design Flow ,MOS layers , stick diagrams , design rules and layout –Lambda based design rules for wires, transistors and contact cuts, Layout Diagrams for logic gates.

UNIT IV

Basic Circuit concepts and scaling of MOS transistors:

Sheet resitsance, Area capacitance, Delay unit, Inverter Delays ,Rise time and fall time estimations, wiring capacitance, Choice of layers, Scaling models ,Scaling factors, Limitaions of scaling.

UNIT V

GATE LEVEL DESIGN AND LAYOUT: Architectural issues, Switch logic networks, Gate logic, transmission gate logic, Alternate gate circuit: Pseudo-NMOS, Dynamic CMOS logic.

SUBSYSTEM DESIGN: Subsystem Design, Shifters, Adders, ALUs, Multipliers: Array multiplier, Serial-Parallel multiplier, Parity generator, Comparators, Zero/One Detectors, Up/Down Counter.

Text Books:

1. Basic VLSI design by Douglas, Pucknell, Kamran Eshraghian, Prantice Hall, 1996 3rd edition.
2. CMOS VLSI Design – A circuits and systems perspective, Neil H.E Weste , David Harris, Ayan Banerjee, pearson ,2009**.**

Reference book:

1. CMOS logic circuit Design – John P. Uyemura , Springer , 2007
2. Modern VLSI Design –Wayne Wolf, Pearson Education , 3rd Edition, 1997.
3. VLSI Design – A.Albert Raj, Latha PHI, 2008.

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IV Year B.Tech CSE – I Sem	**L**	**T/P/D**	**C**
	0	**3**	**2**

(13CSE108) DATA WAREHOUSING AND MINING LABORATORY

Course Objectives:

1. To introduce students to the basic concepts and techniques of Data Mining.
2. Performing data preprocessing tasks for data mining in Weka
3. To perform classification on data sets using the Weka machine learning toolkit.
4. Implement and apply basic algorithms for supervised and unsupervised learning
5. To develop skills of using recent data mining software for solving practical problems.

Course Outcomes:

Upon completion of the course, the students are expected to:

1. At the end of the semester, successful students will have fundamental understanding of data mining algorithms and their applications.
2. Consequently they will have necessary skills to effectively apply data mining techniques to solve real business problems.
3. Apply preprocessing statistical methods for any given raw data.
4. Evaluate the performance of different data mining algorithms.
5. Analyze the results generated to determine if patterns of clusters were detected in the data sets.

DMDW Lab

1. Introduction to the Weka machine learning toolkit – Part 1
2. Introduction to the Weka machine learning toolkit – Part 2
3. Classification using the Weka toolkit
4. Performing data preprocessing for data mining in Weka
5. Performing clustering in Weka
6. Association rule analysis in Weka

Week 7:

Title: Introduction to the Weka machine learning toolkit

Aim: To learn to use the Weak machine learning toolkit

Requirements

How do you load Weka?

1. What options are available on main panel?
2. What is the purpose of the the following in Weka:
    1. The Explorer
    2. The Knowledge Flow interface

3. The Experimenter
4. The command-line interface

3. Describe the **arff**file format.
4. Press the Explorer button on the main panel and load the weather dataset and answer the following questions
   1. How many instances are there in the dataset?
   2. State the names of the attributes along with their types and values.
   3. What is the class attribute?
   4. In the histogram on the bottom-right, which attributes are plotted on the X,Y- axes? How do you change the attributes plotted on the X,Y-axes?
   5. How will you determine how many instances of each class are present in the data
   6. What happens with the Visualize All button is pressed?
   7. How will you view the instances in the dataset? How will you save the changes?

Week 8:

1. What is the purpose of the following in the Explorer Panel?
   1. The Preprocess panel
      1. What are the main sections of the Preprocess panel?
      2. What are the primary sources of data in Weka?
   2. The Classify panel
   3. The Cluster panel
   4. The Associate panel
   5. The Select Attributes panel
   6. The Visualize panel.
2. Load the weather dataset and perform the following tasks:
   1. Use the unsupervised filter Remove With Values to remove all instances where the attribute ‘humidity’ has the value ‘high’?
   2. Undo the effect of the filter.
   3. Answer the following questions:
      1. What is meant by filtering in Weka?
      2. Which panel is used for filtering a dataset?
      3. What are the two main types of filters in Weka?
      4. What is the difference between the two types of filters? What is the difference between and attribute filter and an instance filter?
3. Load the iris dataset and perform the following tasks:
   1. Press the Visualize tab to view the Visualizer panel.
   2. What is the purpose of the Visualizer?
   3. Select one panel in the Visualizer and experiment with the buttons on the panel.

Week 9:

Title : Classification using the Weka toolkit

Aim : To perform classification on data sets using the Weka machine learning toolkit

Requirements

1. Load the 'weather.nominal.arff' dataset into Weka and run Id3 classification algorithm**.** Answer the following questions
   1. List the attributes of the given relation along with the type details
   2. Create a table of the weather.nominal.arff data
   3. Study the classifier output and answer the following questions
      1. Draw the decision tree generated by the classifier
      2. Compute the entropy values for each of the attributes
      3. What is the relationship between the attribute entropy values and the nodes of the decision tree?
   4. Draw the confusion matrix? What information does the confusion matrix provide?
   5. Describe the following quantities:
      1. TP Rate 2. FP Rate
      3. Precision 4. Recall

Week 10:

Title : Performing data preprocessing tasks for data mining in Weka

Aim : To learn how to use various data preprocessing methods as a part of the data mining

Requirements

Application of Discretization Filters

1. Perform the following tasks
   1. Load the 'sick.arff' dataset
   2. How many instances does this dataset have?
   3. How many attributes does it have?
   4. Which is the class attribute and what are the characteristics of this attribute?
   5. How many attributes are numeric? What are the attribute indexes of the numeric attributes?
   6. Apply the Naive Bayes classifier. What is the accuracy of the classifier?

2. Perform the following tasks:
   1. Load the 'sick.arff' dataset.
   2. Apply the supervised discretization filter.
   3. What is the effect of this filter on the attributes?
   4. How many distinct ranges have been created for each attribute?
   5. Undo the filter applied in the previous step.
   6. Apply the unsupervised discretization filter. Do this twice:
      1. In this step, set 'bins'=5

2. In this step, set 'bins'=10
3. What is the effect of the unsupervised filter filter on the datset?

7. Run the the Naive Bayes classifier after apply the following filters
   1. Unsupervised discretized with 'bins'=5
   2. Unsupervised discretized with 'bins'=10
   3. Unsupervised discretized with 'bins''=20.
8. Compare the accuracy of the following cases
   1. Naive Bayes without discretization filters
   2. Naive Bayes with a supervised discretization filter
   3. Naive Bayes with an unsupervised discretization filter with different values for the 'bins' attributes.

Week 11:

Title: Performing clustering using the data mining toolkit

Aim : To learn to use clustering techniques

Requirements

1. Perform the following tasks:
   1. Load the ‘bank.arff’ data set in Weka.
   2. Write down the following details regarding the attributes:
      1. names
      2. types
      3. values.
   3. Run the Simple K-Means clustering algorithm on the dataset
      1. How many clusters are created?
      2. What are the number of instances and percentage figures in each cluster?
      3. What is the number of iterations that were required?
      4. What is the sum of squared errors? What does it represent?
      5. Tabulate the characteristics of the centroid of each cluster.
      6. Visualize the results of this clustering (let the X-axis represent the cluster name, and the Y-axis represent the instance number)
      1. Is there a significant variation in age between clusters?
      2. Which clusters are predominated by males and which clusters are predominated by females?
      3. What can be said about the values of the region attribute in each cluster?
      4. What can be said about the variation of income between clusters?
      5. Which clusters are dominated by married people and which clusters are dominated by unmarried people?
      6. How do the clusters differ with respect to the number of children?
      7. Which cluster has the highest number of people with cars?
      8. Which clusters are predominated by people with savings accounts?

9. What can be said about the variation of current accounts between clusters?

10. Which clusters comprise mostly of people who buy the PEP product and which ones are comprised of people who do not buy the PEP product?

4. Run the SimpleKMeans algorithm for values of K (no. of clusters) ranging from 1 to 12. Tabulate the sum of squared errors for each run. What do you observe about the trend of the sum of squared errors?
5. For the run with K=12, answer the following questions:
   1. Is there a significant variation in age between clusters?
   2. Which clusters are predominated by males and which clusters are predominated by females?
   3. How do the clusters differ with respect to the number of children?
   4. Which clusters comprise of people who buy the PEP product and which ones are comprised of people who do not buy the PEP product?
   5. Do you see any differences in your ability to evaluate the characteristics of clusters generated for K=6 versus K=12? Why does this difference arise?

Week 12:

Title

Using Weka to determine Association rules

Aim

To learn to use Association algorithms on datasets

Requirements

1. Perform the following tasks
   1. Define the following terms
      1. item and item set
      2. Association
      3. Association rule
      4. Support of an association rule
      5. Confidence of an association rule
      6. Large item set
      7. Association rule problem
   2. What is the purpose of the Apriori Algorithm
2. Perform the following tasks:
   1. Load the 'vote.arff' dataset
   2. Apply the Apriori association rule
   3. What is the support threshold used? What is the confidence threshold used?
   4. Write down the top 6 rules along with the support and confidence values.
   5. What does the figure to the left of the arrow in the association rule represent?
   6. What does the figure to the right of the arrow in the association rule represent?
   7. For rule 8, verify that numerical values used for computation of support and confidence are

in accordance with the data by using the Preprocess panel. Then compute the support and
confidence values. Are they above the threshold values?

3. Perform the following tasks:
    1. Load the dataset 'weather.nominal.arff'.
    2. Apply the Apriori association rule
        1. Consider the rule "temperature=hot ==> humidity=normal." Compute the support and confidence for this rule.
        2. Consider the rule "temperature=hot humidity=high ==> windy=TRUE." Consider the support and confidence for this rule.
        3. Is it possible to have a rule like the following rule: "outlook=sunny temperature=cool" ==> humidity=normal play=yes

4. Perform the following tasks:
    1. Load the bank-data.csv file.
    2. Apply the Apriori association rule algorithm. What is the result? Why?
    3. Apply the supervised discretization filter to the age and income attributes.
    4. Run the Apriori rule algorithm
    5. List the rules that were generated.

Text Books :

1. Data mining: Concepts and Techniques, Jiawei Han and Micheline Kamber, 2nd Edition, Elsevier, 2006.

REFERENCES:

1. SQL-PL/SQL by Ivan Bayrose
2. Data Warehousing Fundamentals By Paulraj
3. Data Mining Introductory & Advanced Topic by Margaret H. Dunham
4. Data Mining Techniques – ARUN K PUJARI, University Press.
5. Data Mining for Association Rules and Sequential Patterns: Sequential and Parallel Algorithms, Jean-Marc Adamo, ISBN: 0387950486

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(13ITD108) WEB TECHNOLOGIES LABORATORY

Course Objectives:

1. Choose best technologies for solving web client/server problems
2. Create conforming web pages
3. Use Javascript for dynamic effects
4. Use Javascript to validate form input entry
5. Use appropriate client-side or Server-side applications

Course Outcomes:

Upon completion of this course, students should be able to:

1. Identify the entities responsible for implementing mark-up language standards.
2. Code and troubleshoot HTML and XHTML web pages, incorporating CSS and Scripts.
3. Incorporate multimedia (images, animation, sound, and movies) into web pages.
4. Demonstrate effective use of Dreamweaver to build and publish professional websites that employ best practices, adhere to current web standards, and pass Validation.

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
4. XML editor like Altova Xml-spy [www.Altova.com/XMLSpy – free] , Stylusstudio , etc.,
5. A database either Mysql or Oracle
6. JVM(Java virtual machine) must be installed on your system
7. BDK(Bean development kit) must be also be installed

WEEK 1

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

1) HOME PAGE: The static home page must contain three frames.

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

Left frame : At least four links for navigation, which will display the catalogue of respective links. For e.g.: When you click the link “CSE” the catalogue for CSE Books should be displayed in the Right frame.
Right frame: The pages to the links in the left frame must be loaded here. Initially this page contains description of the web site.

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

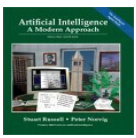
Fig 1.1

2) LOGIN PAGE: This page looks like below:

Logo	Web Site Name			
Home	Login	Registration	Catalogue	Cart
CSE ECE EEE CIVIL	Login : Password: Submit Reset			

3) CATOLOGUE PAGE: The catalogue page should contain the details of all the books available in the web site in a tabular format.
The details should contain the following:

1. Snap shot of Cover Page.
2. Book Title, Author Name, Publisher.
2. Price.
4. Add to cart button.

Logo	Web Site Name			
Home	Login	Registration	Catalogue	Cart
CSE ECE EEE CIVIL	 	Book : XML Bible Author : Winston Publication : Wiely Book : AI Author : S.Russel Publication : Princeton hall	$ 40.5 $ 63	Add to cart Add to cart

		Book : Java 2 Author : Watson Publication : BPB publications	$ 35.5	Add to cart
		Book : HTML in 24 hours Author : Sam Peter Publication : Sam publication	$ 50	Add to cart

WEEK 2 : 4) CART PAGE:

The cart page contains the details about the books which are added to the cart.The cart page should look like this:

Logo	Web Site Name			
Home	Login	Registration	Catalogue	Cart

IT CSE ECE EEE CIVIL	Book name	Price	Quantity	Amount
	Java 2	$35.5	2	$70
	XML bible	$40.5	1	$40.5
			Total amount -	$130.5

5) REGISTRATION PAGE: Create a "registration form "with the following fields

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

WEEK 3VALIDATION:

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

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

b) Write JavaScript to validate the above login page with the above parameters.

WEEK 4

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

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

```
<HTML>
<HEAD>
<style type="text/css">
B.headline {color:red; font-size:22px; font-family:arial; text-decoration:underline}
</style>
</HEAD>
<BODY>
<b>This is normal bold</b><br>
<b class="headline">This is headline style bold</b>
</BODY>
</HTML>
```

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

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

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

4) Define styles for links as

A:link
A:visited
A:active
A:hover

Example:<style type="text/css">

```
A:link      {text-decoration: none}
A:visited {text-decoration: none}
A:active  {text-decoration: none}
A:hover  {text-decoration: underline; color: red;}
</style>
```

5) Work with layers: For example:

LAYER 1 ON TOP:

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

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

Selector {cursor:value}

For example:

```
<html>
<head>
<style type="text/css">
.xlink {cursor:crosshair}
.hlink{cursor:help}
</style>
</head>
<body>
<b>
<a href="mypage.htm" class="xlink">CROSS LINK</a>
<br>
<a href="mypage.htm" class="hlink">HELP LINK</a>
</b>
</body>
</html>
```

WEEK 5

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

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

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

Display the XML file as follows.

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

Use XML schemas XSL and CSS for the above purpose.

Note: Give at least for 4 books. It should be valid syntactically.

Hint: You can use some xml editors like XML-spy

WEEK 6

VISUAL BEANS:

Create a simple visual bean with a area filled with a color.

The shape of the area depends on the property shape. If it is set to true then the shape of the area is Square and it is Circle, if it is false.

The color of the area should be changed dynamically for every mouse click. The color should also be changed if we change the color in the "property window ".

WEEK 7

Install TOMCAT web server.

While installation assign port number 8000 to TOMCAT. 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:8000/vnr/books.html

WEEK 8

User Authentication :

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

1. Create a Cookie and add these four user id's and passwords to this Cookie.
2. Read the user id and passwords entered in the Login form (week1) and authenticate with the values (user id and passwords) available in the cookies. If he is a valid user (i.e., user-name and password match) you should welcome him by name(user-name) else you should display " You are not an authenticated user ".

   Use init-parameters to do this. Store the user-names and passwords in the web.xml and access them in the servlet by using the getInitParameters() method.

WEEK 9

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

1. Use init-parameters to do this. access them in the servlet by using the getInitParameters() method.
2. Read the user id and passwords entered in the Login form (week1) and authenticate with the values (user id and passwords) with above accessed values. If user is a valid user (i.e., user-name and password match) you should welcome user by name (user-name) else you should display " You are not an authenticated user ".

WEEK 10

Install a database (Mysql or Oracle).

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

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 (week2).

WEEK 11

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

WEEK 12

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

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(13ITD107) MOBILE APPLICATION DEVELOPMENT LABORATORY
(Elective-I Lab)

Course Objectives:

Students should implement (and learn to use the tools to accomplish this task) the following during Practical hours:

1. Understand the app idea and design user interface/wireframes of mobile app
2. Set up the mobile app development environment
3. Develop and debug mobile app components – User interface, services, notifications, broadcast receivers, data components
4. Using emulator to deploy and run mobile apps
5. Testing mobile app - unit testing, black box testing and test automation

Course Outcomes:

Upon completion of this lab course, student shall be able to:

1. Understand user interfaces of mobile apps with android
2. Design and develop mobile apps, using Android as development platform
3. Solve real world problems using Android as development platform

HARDWARE / SOFTWARE REQUIREMENTS

- Machine:Pentium P4, 2.8 GHz or higher, 2 GB (or higher) RAM, 40 GB (or higher) HD,Windows XP with SP2 (or higher).
- S/W on Students Machine : Android ADT bundle, MonkeyTalk, Robotium, Tomcat (or any other J2EE web container)

1) Create “Hello World” application. That will display “Hello World” in the middle of the screen in thered color with white background.
2) To understand Activity, Intent
   a. Create sample application with login module.(Check username and password)
   b. On successful login, go to next screen. And on failing login, alert user using Toast.
   c. Also pass username to next screen.
3) Create login application where you will have to validate EmailID(UserName). Till the username and password is not validated , login button should remain disabled.
4) Create and Login application as above . On successful login , open browser with any URL.

5) Create an application that will pass some number to the next screen , and on the next screen thatnumber of items should be display in the list.
6) Understand resource folders :
   a. Create spinner with strings taken from resource folder(res >> value folder).
   b. On changing spinner value, change image.
7) Understand Menu option.
   a. Create an application that will change color of the screen, based on selected options from themenu.
8) Create an application that will display toast(Message) on specific interval of time.
9) Create an background application that will open activity on specific time.
10) Create an application that will have spinner with list of animation names. On selecting animation name , that animation should affect on the images displayed below.
11) Understanding of UI :
   a. Create an UI such that , one screen have list of all the types of cars.
   b. On selecting of any car name, next screen should show Car details like : name , launched date ,
   company name, images(using gallery) if available, show different colors in which it is available.
12) Understanding content providers and permissions:
   a. Read phonebook contacts using content providers and display in list.
13) Read messages from the mobile and display it on the screen.
14) Create an application to call specific entered number by user in the EditText
15) Create an application that will create database with table of User credential.
16) Create an application to read file from asset folder and copy it in memory card.
17) Create an application that will play a media file from the memory card.
18) Create an application to make Insert , update , Delete and retrieve operation on the database.
19) Create an application to read file from the sdcard and display that file content to the screen.
20) Create an application to draw line on the screen as user drag his finger.
21) Create an application to send message between two emulators.
22) Create an application to take picture using native application.
23) Create an application to pick up any image from the native application gallery and display it on the screen.
24) Create an application to open any URL inside the application and clicking on any link from that URl should not open Native browser but that URL should open the same screen.

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(13CSE111) SCRIPTING LANGUAGE LABORATORY
(Elective-I Lab)

Course Objectives :

1. Analyze problems and synthesize suitable solutions. Specifically:
2. Design and implement Perl and Python software solutions that accommodate specified requirements and constraints, based on analysis or modelling or requirements specification.

Course Outcomes:

Upon completion of the course, the students are expected to:

1. Explain the differences between typical scripting languages and typical system and
2. application programming languages.
   Apply your knowledge of the strengths and weaknesses of scripting languages to select an
3. implementation language.
   Create software systems using scripting languages, including Perl and Python.
   write server-side scripts using Perl and Python's CGI facilities

List of Programs

1. Write the script(s) for Perl, Python, and TCL to adding of numbers from 1 to 100 using control statements.
2. Write the script(s) for Perl, Python, PHP and TCL to implement data structure (array) concepts.
3. Write the script(s) for Perl, Python, PHP and TCL to implement I/O streams functions.
4. Write a Perl script that computes the average of each column in a table of data (It shows one common usage: read in the data and split each line directly to "words" and store these words in an array).
5. Write a Perl Script to extracts a subset of docs from a database. The target doc id is specified in a separate file. It shows you how to use the associative array (hash table) to store the target IDs. It also shows you a common way of detecting the beginning and end of a document through pattern matching.
6. Write a Perl script to run any command by calling a system function (This is like the "for" or "foreach" loop in a shell script, but it allows you to do some command with different numerical parameter values specified in a file. It shows you how you can dynamically generate a command string and execute it with shell).

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(13CSE109) GAMING ENGINEERING LABORATORY
(Elective-I Lab)

Course Objectives:

1. Mastery of event-based programming
2. Mastery of resource management as it relates to rendering time, including level-of-detail and culling.
3. Familiarity with the various components in a game or game engine.
4. Familiarity with leading open source game engine components.
5. Familiarity with C# and High Level Shading Language (HLSL)
6. Familiarity with usage of graphics frame works like DirectX and XNA Game Studio

Course Outcomes: Upon completion of this course student will be able to:

1. Understand all game development problems and issues, such as story creation, character control, scene management, selection of programming language, mathematical analysis, physical analysis, graphics, multimedia, artificial intelligence, and others.
2. Design and build a single-user 2D and 3D game.
3. Design and build a multi-user PC or Mobile game
4. Solve complex logic problems using the tools and techniques found in Computer Science, Software Engineering, and Game Programming.

Recommended Systems/Software Requirements:

Hardware Requirements: Intel based desktop PC with minimum of 166 MHZ of faster processor with at least 4GB RAM and 100GB free disk space with good NVIDIA/ ATI Graphics card.

Software Requirements: Windows 7 Operating System, Visual Studio 10, Dot Net Framework, XNA Game studio 3.0 or above version, Direct X 9.0 or above version graphics framework.

Cycle – 1 (2-D Shooter Game Design)

WEEK 1

Installation of Visual Studio 10, Direct X and XNA Game Studio

WEEK 2

5. Installing XNA and opening your first XNA project
   Write a C# program for:
1. Rendering 2D images to the screen
2. Scaling, rotating and positioning 2D images
3. Keyboard input

4. Playing sound effects in XNA

WEEK 3

Write a C# program for:

1. Per-pixel texture manipulations
2. Random terrain slope generation
3. Alpha blending
4. Collision detection

Cycle – 2 (3-D Flight Sim Game Design)

WEEK 4

1. Starting a project: setting up and using the Development Environment
2. The effect file: effects are needed to draw stuff on the screen

Write a C# program for:

3. The first triangle: defining points, displaying them using XNA
4. World space: defining points in 3D space, defining camera position

WEEK 5

Write a C# program for:

1. Rotation & translation: rotating and moving the scene
2. Indices: removing redundant vertex information to decrease AGP/PCIX bandwidth
3. Terrain basics: bringing altitude into our program
4. Terrain from file: create a terrain from an image file

WEEK 6

Write a C# program for:

1. Keyboard: read user input on the keyboard using XNA
2. Adding colors: add simple color to you terrain
3. Lighting basics: lighting can be complex to fully understand
4. Terrain lighting

WEEK 7

Write a C# program for:

1. Adding textures to your triangles
2. Dynamically generating the 3D city environment
3. Adding the skybox to get rid of the black background

WEEK 8

Write a C# program for:

1. Basic, but accurate flight modeling
2. Camera movement

WEEK 9

Write a C# program for:

1. Point sprites, basic billboarding
2. Alpha blending

Cycle – 3 (3-D Game Processing on GPU using HLSL)

WEEK 10

Write a C# and HLSL program for:

1. Camera initialization
2. Drawing triangles from a vertex buffer (only vertex buffers, no index buffers)

WEEK 11

Write a C# and HLSL program for:

1. Adding textures to triangles
2. A basic understanding of lighting (dot product)

WEEK 12

Write a C# and HLSL program for:

1. Effect loading
2. Loading a textured model from file

REFERENCES

1. http://www.riemers.net/eng/Tutorials/xnacsharp.php

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	0	**3**	**2**

(13CSE110) CYBER SECURITY LABORATORY
(Elective-I Lab)

Course Objectives

1. Expose to computer science terminology related to coding, password protection, social engineering, and network security.
2. Outline Information Security, Assurance over the Internet and Cyber Forensics.
3. Expose to the spectrum of security activities, methods, methodologies, and procedures.
4. Emphasis on practical aspects of Information Security, Service Processes, storage and security management.
5. Know Cyber Forensics standards, laws and acts for Information Security.

Course Outcomes

Upon completion of this course, students should be able to:

1. Comprehend the security principles, threats and attack techniques.
2. Explain authentication and access control, reference monitors, and security models.
3. Realize the importance of network security and operating system security.
4. Appreciate storage, security management, Service Delivery and support process
5. Apply cyber forensics tools for imaging and recovery based on various information security, laws and standards

Experiments

1. Finger print recognition
2. Password cracking
3. Injection attack
4. Evidence handling procedure
5. Collection of foot prints or evidence
6. Testing for email security
7. Testing for Web security
8. Setting up Firewalls
9. Un authorized access of computers – Identification or prevention

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(13ECE110) DIGITAL IMAGE PROCESSING LABORATORY
(Elective-I Lab)

Course Objectives

1. To read, display and know the details of image
2. Understand the fundamental DIP algorithms and implementation;

Course Outcomes

After going through this course the student will be able to

1. Gain experience in applying image processing algorithms to real problems.
2. Able to transform the image from one domain to other domain

List of experiments

1. Read and Display of Images.
2. Distance and Connectivity
3. Image Arithmetic : Addition, Subtraction, Difference, Multiplication, Division
4. Point Operations : Linear, Non-linear, clipping, window
5. Neighbourhood Operations : Linear and non-linear filtering
6. Image Histogram
7. Image Transforms
8. Morphological Operations : dilation, erosion, closing , opening
9. Image Segmentation : single and double threshold, region growing and splitting
10. Image restoration
11. Lossless and lossy image compression
12. Image Processing Test Bench(Case study)

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IV Year B.Tech CSE – II Sem	**L**	**T/P/D**	**C**
	3	**0**	**3**

(13CSE022) SOFTWARE PROJECT MANAGEMENT

Course Objectives:

1. A basic knowledge of software project management principles
2. The ability to come up with a project schedule and assign resources
3. Choose an appropriate project development methodology (e.g. waterfall, spiral ...)
4. Identify project risks, monitor and track project deadlines
5. The capability to work in a team environment and be aware of different modes of communications

Course Outcomes:

Upon completion of the course, the students are expected to:

1. identify and describe how different project contexts will impact upon all aspects of a software development project
2. identify and describe the key phases of project management and the key skills associated with each
3. determine an appropriate project management approach through an evaluation of the business context and project scope and knowledge of agile and traditional project management approaches
4. demonstrate through application, knowledge of the key project management skills, such as product and work break-down structure, schedule; governance including progress reporting, risk and quality management
5. as part of a small team research and produce a concise piece of writing suitable for presentation to senior management

UNIT-I

Conventional Software Management: The waterfall model, conventional software Management performance. Overview of Project Planning – Stepwise Project Planning.

Improving Software Economics: Reducing Software product size, improving software processes, improving team effectiveness, improving automation, Achieving required quality, peer inspections.

UNIT – II

The old way and the new way: The principles of conventional software Engineering, principles of modern software management, transitioning to an iterative process.

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.

UNIT – III

Work Flows of the process: Software process workflows, Iteration 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, Iteration planning process, Pragmatic planning.

UNIT – IV

Process Automation:Automation Building blocks.

Project Control and Process instrumentation: The seven core Metrics, Management indicators, quality indicators, life cycle expectations, pragmatic Software Metrics, Metrics automation.

Tailoring the Process: Process discriminants.

UNIT – V

Project Organizations and Responsibilities:

Line-of-Business Organizations, Understanding Behavior – Organizational Behavior

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, 2005.

REFERENCES

1. Software Project Management, Bob Hughes and Mike Cotterell: Tata McGraw-Hill Edition.
2. Software Project Management, Joel Henry, Pearson Education.
3. Software Project Management in practice, Pankaj Jalote, Pearson Education .2005.

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(13CSE023) SEMANTIC WEB AND SOCIAL NETWORKS
(Elective-III)

Course Objectives

1. To analyse Web Intelligence and synthesize Knowledge Representation for the Semantic Web
2. To evaluate Ontology engineering and applications pertaining to it.
3. To understand the essence of Semantic Web Applications, Services that promotes Semantic Web Technology
4. To infer the principles of Social Network Analysis and correlate the rules with the semantic web
5. To categorize ontologies, domain modeling, logic, reasoning and inference techniques, semantic web services.

Course Outcomes:

Upon completion of the course, the students are expected to:

1. Evaluate principles of ontology and design inference engines in semantic web development
2. Build semantic web applications with social network features
3. Infer the metaphor of social media as "communication as culture."
4. Discuss critically on the use of social tools and identify strategies for their effective implementation
5. Evaluate the social media and synthesize semantic web applications that mitigate societal bad impacts and promote connectivity that enhances sharing.

UNIT I

Thinking and Intelligent Web Applications, The Information Age, The World Wide Web, Limitations of Todays 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 Techno logy, Web Search Agents and Semantic Methods,

UNIT V

What is social Networks analysis, development of the social networks analysis, Electronic Sources for Network Analysis - Electronic Discussion networks.

Blogs and Online Communities. Web Based Networks. Building Semantic Web Applications with social network features.

TEXTBOOKS:

1. Thinking on the Web - Berners Lee.Godel and Turing,Wiley interscience,20()8.
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, Rudi Studer. Paul 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.

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(13ITD020)INFORMATION RETRIEVAL SYSTEMS
(Elective-III)

Course Objectives:

1. Study fundamentals of DBMS, Data warehouse and Digital libraries
2. Learn various preprocessing techniques and searching and indexing approaches in text mining
3. Know various clustering approaches and study different similarity measures and different cognitive approaches used in text retrieval systems
4. Know about query languages and online IR system

Course Outcomes

By the end of this course the student should be able to:

1. Recognize the Boolean Model, Vector Space Model, and Probabilistic Model.
2. Understand retrieval utilities and different formatting tags
3. Understand cross-language information retrieval
4. Understand the clustering techniques and determine the efficiency.

UNIT I

Introduction: Definition, Objectives, Functional Overview, Relationship to DBMS, Digital libraries and Data Warehouses. Information Retrieval System Capabilities, Search, Browse, Miscellaneous.

UNIT II

Cataloging and Indexing: Objectives, Indexing Process, Automatic Indexing, Information Extraction. Data Structures: Introduction, Stemming Algorithms, Inverted file structures, N-gram data structure, PAT data structure, Signature file structure, Hypertext data structure. Automatic Indexing: Classes of automatic indexing, Statistical indexing, Natural language, Concept indexing, Hypertext linkages.

UNIT III

Document and Term Clustering: Introduction, Thesaurus generation, Item clustering, Hierarchy of clusters. User Search Techniques: Search statements and binding, Similarity measures and ranking, Relevance feedback, Selective dissemination of information search, weighted searches of Boolean systems, Searching the Internet and hypertext.

UNIT IV

Information Visualization: Introduction, Cognition and perception, Information visualization technologies. Text Search Algorithms: Introduction, Software text search algorithms, Hardware text search systems. Information System Evaluation:

Introduction, Measures used in system evaluation, Measurement example – TREC results.

UNIT V

Multimedia Information Retrieval, Models and Languages, Data Modeling, Query Languages, Indexing and Searching.Libraries and Bibliographical systems, online IR system, OPACs, Digital Libraries.

TEXTBOOKS

1. Information Storage and Retrieval systems Theory and Implementation Second Edition
2. Modern Information Retrival By Ricardo Baeza-Yates, Pearson Education, 2007.

REFERENCE BOOKS

1. Information Retrieval: Algorithms and Heuristics By David A Grossman and Ophir Frider, 2nd Edition, Springer.
2. Frakes, W.B., Ricardo Baeza-Yates: Information Retrieval Data Structures and Algorithms, Prentice Hall, 1992.
3. Modern Information Retrival By Yates Pearson Education.
4. Information Storage & Retieval By Robert Korfhage – John Wiley & Sons
5. Natural Language Processing and Information Retrieval, T.Siddiqui and U.S.Tiwary, Oxford University Press.

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(13ITD078)HUMAN COMPUTER INTERACTION
(Elective-III)

Course Objectives:

1. To facilitate communication between students of psychology, design, and computer science on user interface development projects.
2. To provide the future user interface designer with concepts and strategies for making design decisions.
3. To expose the future user interface designer to tools, techniques, and ideas for interface design.
4. To introduce the student to the literature of human-computer interaction.
5. To stress the importance of good user interface design design.

Course Outcomes:

After completing this course students must be able to demonstrate the knowledge and ability on

1. To understand the GUI & UI.
2. How to make a good design and information about design process.
3. Components involved in designing a process or GUI

UNIT –I

Introduction:

Importance of user Interface – definition, importance of good design.Benefits of good design. A brief history of Screen design

UNIT –II

The graphical user interface – popularity of graphics, the concept of direct manipulation, graphical system, Characteristics, Web user – Interface popularity, characteristics- Principles of user interface.

UNIT –III

Design process – Human interaction with computers, importance of human characteristics human consideration, Human interaction speeds, and understanding business junctions.

UNIT –IV

Screen Designing - Design goals – Screen planning and purpose, organizing screen elements, ordering of screen data and content – screen navigation and flow – Visually pleasing composition – amount of information – focus and emphasis – presentation information simply and meaningfully – information retrieval on web – statistical graphics – Technological consideration in interface Design.

Windows – New and Navigation schemes selection of window, selection of devices based and screen based controls.

UNIT –V

Components – text and messages, Icons and increases – Multimedia, colors, uses problems, choosing colors.

Software tools – Specification methods, interface – Building Tools.

Interaction Devices – Keyboard and function keys – pointing devices – speech recognition digitization and generation – image and video displays – drivers.

TEXT BOOKS :

1. The essential guide to user interface design, Wilbert O Galitz, Wiley DreamTech.
2. Designing the user interface. 3rd Edition Ben Shneidermann , Pearson Education Asia.

REFERENCE BOOKS:

1. Human – Computer Interaction. Alan Dix, Janet Fincay, Gre Goryd, Abowd, Russell Bealg, Pearson Education
2. Interaction Design Prece, Rogers, Sharps. Wiley Dreamtech,
3. User Interface Design, Soren Lauesen , Pearson Education. Mode of Evaluation

Mode of Examination

Written examinations, assignments and mini projects

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(13CSE025) BIO INFORMATICS
(Elective-III)

Course Objectives:

The course introduces undergraduate students to the emerging interdisciplinary field of Bioinformatics, combining elements of the Computational Sciences with the Biological Sciences. In this course,

1. The student will be able to understand basic concepts of internet, how the concepts of computer sciences that relate to problems in biological sciences.
2. The students will be able to understand the scope, basic concepts of Bioinformatics, Biological information resources and retrieval system
3. Emphasis would be laid on understanding scientific databases & algorithms, sequence analysis and dynamic programming in applicable to modern biology
4. The students will have sufficient understanding of Biological databases and their types

Course Outcomes:

After completing the course, the students should be able to:

1. Describe the contents and properties of the most important bioinformatical databases, perform text- and sequence-based searches, and analyze and discuss the results in light of molecular biological knowledge
2. Explain the major steps in pair wise and multiple sequence alignment, explain the principle for, and execute pair wise sequence alignment by dynamic programming
3. Explain the major features of evolution of genes and proteins and explain how different methods can be used to construct phylogenetic trees.
4. Explain the major features of methods for modeling protein structures and use programs for visualizing and analyzing such structures.
5. Give examples of methods for describing and analyzing genes, genomes and gene expression and Define and discuss central concepts used in systems biology

UNIT I

Introduction to Bioinformatics: Scope of Bioinformatics, History of Bioinformatics; Biological information resources and retrieval system Elementary commands and protocols, ftp, telnet, http

UNIT II

Basic Sequencing: DNA mapping and sequencing , Map Alignment , sequencing methods like Shotgun and Sanger method

UNIT III

Sequencing Alignment and Dynamic Programming: BLAST, Heuristic Alignment algorithms , global sequence alignments-Needleman Wunsch algorithm, Smith-Waterman algorithm-Local sequence alignments

UNIT IV

Evolutionary Trees and Phylogeny: Multiple sequence alignment and phylogenetic analysis.

UNIT V

Databases: Introduction to Biological databases, Organization and management of databases, Structure databases- PDB(Protein Data Bank), Molecular modeling databases(MMDB),Primary databases NCBL,EMBL,DDBJ, Secondary Databases-Swissprot, KEGG, Bio Chemical databases- KEGG, BRENDA, WIT, EXPASY

TEXT BOOKS

1. Bioinformatics Basics, Applications in Biological Science and Medicine by Hooman H. Rashidi and Lukas K.buehler CAC Press 2000
2. Algorithms on strings trees and sequences Dan Gusfield, Cambridge University Press 1997

REFERENCES

1. Bioinformatics: David Mount 2000,CSH Publications
2. Bioinformatics: A machine Learning Approach P.Baldi. S.Brunak, MIT Press 1988
3. Developing Bioinformatics Computer Skills", Gibas C, Jambeck P
4. Bioinformatics: A Practical Guide to the Analysis of Genes and Proteins" , Baxevanis AD, Ouellette BFF (eds):

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(13ITD009) SOFTWARE TESTING METHODOLOGIES
(Elective-III)

Course Objectives:

1. Explain the types of Bugs, Testing levels
2. Flow graph and Path testing, application of path testing
3. Knowledge on Transaction flow testing alpha, beta and domain testing.
4. Logic based testing, state testing, testability tips. Good bad graphs
5. Know the concept of Graph matrices and application, test management

Course Outcomes:

1. Apply fundamental knowledge of Testing in Real time scenarios.
2. Test a simple application.
3. Understand and Applying the Techniques in Software Development Life cycle

UNIT- I

Introduction: Purpose of testing-Dichotomies-Software Testing Principles- Bugs, consequences of bugs, Taxonomy of bugs -The Tester's Role in a Software Development Organization-Black box testing and white box testing- Defects -Cost of defects- Defect Classes- Defect Examples, software testing life cycle.

UNIT- II

Flow graphs and Path testing: Basics concepts of path testing-predicates-path predicates and achievable paths- path sensitizing- path instrumentation, application of path testing.

Transaction Flow Testing: Transaction flows- transaction flow testing techniques-

Dataflow testing: Basics of dataflow testing - strategies in data flow testing – application of data flow testing.

UNIT- III

Test Case Design Strategies: Using Black Box Approach to Test Case Design - Random Testing – Requirements based testing – Boundary Value Analysis – Equivalence Class Partitioning– Compatibility testing – User documentation testing – Domain testing.

Alpha, Beta Tests – Usability and Accessibility testing – Configuration testing - Compatibility testing – Testing the documentation.

UNIT- IV

Paths, Path products and Regular expressions: Path products & path expression-reduction procedure- applications- regular expressions & flow anomaly detection.

Logic Based Testing: Overview decision tables-path expressions, k-v charts- State-

State Graphs and Transition testing: State graphs- good & bad stategraphs-statetesting

State, state graphs and transition testing: state graphs, good and bad state graphs, state testing, testability tips

UNIT- V

Graph Matrices and applications: motivational over view, matrix of graph, relations, power of matrix, node reduction algorithm.

People and organizational issues in testing: Organization structures for testing teams – testing services - Test Planning – Test Plan Components – Test Plan Attachments – Locating Test Items – test management – test process- bug detection life cycle.

TEXT BOOKS

1. "Software Testing – Principles and Practices", Srinivasan Desikan and Gopalaswamy Ramesh, Pearson education, 2006.
2. "Software Testing Techniques", Boris Beizer, 2nd Edition, Van Nostrand Reinhold, New York, 1990

REFERENCES

1. "Software Testing", Ron Patton, Second Edition, Sams Publishing, Pearson education, 2007
2. "Software Testing – Effective Methods, Tools and Techniques", Renu Rajani, Pradeep Oak, Tata McGraw Hill, 2004.
3. "Software Testing in the Real World – Improving the Process", Edward Kit, Pearson Education, 1995.
4. "Foundations of Software Testing – Fundamental algorithms and techniques", Aditya P. Mathur, Dorling Kindersley (India) Pvt. Ltd., Pearson Education, 2008

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(13CSE021) ADVANCED BUSINESS ANALYTICS
(Elective-IV)

Course Objectives:

1. Expose the students to Business Intelligence domain by Introducing insights of Data Mining, Data Warehousing and Integration issues.
2. Predict frequent patterns using association analysis techniques.
3. Discuss supervised and unsupervised learning techniques to obtain useful and hidden data for analysis.
4. Introduce Interactive Visual Data Analysis techniques to visualize.
5. Describe various kinds of data and to know how to utilize time series data.

Course Outcomes:

1. Differentiate between Transaction Processing and Analytical applications and describe the need for Business Intelligence.
2. Exhibit understanding of technology and processing associated with data mining.
3. Demonstrate Data Mining implementation methodology and project life cycle.
4. Design an enterprise dashboard that depicts the key performance indicators which helps in decision making.
5. Show application of concepts using open source tools

UNIT-I Introduction and Algorithms of Data Mining

What is Data Mining? Integration of Data Mining system with a Database or a Data Warehouse System, Major issues in Data Mining, Applications and Trends in Data Mining. Mining Frequent Patterns, Associations: Basic Concepts, Efficient and Scalable Frequent Itemset, Mining methods (Apriori Algoithm, improving efficiency of Apriori, Mining frequent Itemsets without Candidate generation, using vertical data formats, closed frequent itemsets). Mining various kinds of association rules, from association analysis to Correlation analysis, constraint-based association mining

UNIT-II Cluster Analysis, Classification and Prediction

Types of data in cluster analysis, classical Partitioning methods : k-Means and k-Medoids. What is classification? What is Prediction? Classification by Decision tree Induction, Bayesian classification, Rule based classification, Prediction: Linear Regression, non-linear regression

UNIT-III Introduction to Interactive Visual Data Analysis

- Challenges faced by everyday data analysts
- A brief history of interactive visual data analysis
- Differences between statics graphics and interactive graphics

UNIT-IV Sensing and Analyzing Univariate Data

- Sensing and Analyzing Univariate Data
- Distribution analysis of categorical data
- Distribution analysis of continuous data
- Deviation analysis
- Part-to whole and ranking analysis
- Univariate data analysis best practices

UNIT-V Sensing and Analyzing Time Series Data

- Characteristics of time-series data
- Visual analysis techniques for time-series data
- Interactive graphics aided time-series analysis
- Visual time-series analysis best practices

Reference Books:

1. Jiawei Han and Micheline Kamber, Data Mining: Concepts and Techniques, Second Edition, Elsevier
2. Michael Berry and Gordon Linoff, Data Mining Techniques, Wiley Publishing, 2004.
3. Kimball and Ross, The Data Warehouse Toolkit, Second Edition, John Wiley & Sons, 2002. T. Davenport, “Competing on Analytics,”
4. T.Davenport, “Competing on Analytics” Harvard Business Review(Decision Making),January 2006.

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(13ITD016) COMPUTER FORENSICS

(Elective-IV)

Course Objectives:

1. Gain a working knowledge of Computer Forensics.
2. Explain the responsibilities and liabilities of a computer forensic investigator
3. Explain where digital evidence resides on computer storage devices
4. Learn how to work with Forensic tools.

Course Outcomes:

Upon completion of this course, students should be able to:

1. Apply appropriate skills and knowledge in solving computer forensics problems.
2. Display their competence in the various forensic computing field.
3. Apply their theoretical and practical knowledge in forensic computing, into the future and emerging technology
4. Perform competitively as a technical support in any organization

UNIT I

Computer Forensics Fundamentals: What is Computer Forensics?. Use of Computer Forensics in Law Enforcement, 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 Forensics Technology, Types of Law Enforcement - Computer Forensic Technology - Types of Business Computer Forensics 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 and Data Seizure: Why Collection Evidence? Collection Options – Obstacles – Types of Evidence – The Rules of Evidence- Volatile Evidence- General Procedure – Collection and Archiving – Methods of Collection – Artifacts – Collection 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 Preserving Computer Forensics 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, unsing network tools, examining the honeynet project.

UNIT IV

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.

Current computer forensic tools: evaluating computer forensic tool needs, computer forensics software tools, computer forensics hardware tools, validating and testing forensics software.

UNIT V

E-Mail investigations: Exploring the role of E-mail in investigation, exploring the role of the 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.

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.

TEXT BOOKS

1. Computer forensics, computer crime investigation by John R.Vacca, Firewall Media, New Delhi.
2. Computer forensics and investigations by Nelson, Phillips Enfinger Steuart, CENGAGE Learning.

REFERENCE BOOKS

1. Real Digital Forensics by Keith J.Jones, Rechard Bejtlich, Curtis W.Rose, Addison-Wesley Pearson Education.
2. Forensic compiling, A Tractitioneris Guide By Tony Sammes and Brain Jenkinson, Springer International Edition.
3. Computer Evidence Collection & Presentation by Christopher L.T.Brown, Firewall Media.
4. Homeland Security, Techniques & Technologies by Jesus Mena, 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.

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(13CSE026) DESIGN PATTERNS
(Elective-IV)

Course Objectives:

1. Design patterns are a systematic approach that focus and describe abstract systems of interaction between classes, objects, and communication flow
2. Comprehend the nature of design patterns by understanding a small number of examples from different pattern categories, and to be able to apply these patterns in creating an OO design.
3. Given OO design heuristics, patterns or published guidance, evaluate a design for applicability, reasonableness, and relation to other design criteria.
4 Good knowledge on the documentation effort required for designing the patterns.

Course Outcomes:

Upon completion of this course, students should be able to:

1. Have a deeper knowledge of the principles of object-oriented design
2. Understand the design patterns that are common in software applications.
3. Understand how these patterns related to object-oriented design.
4. Will be able to document good design pattern structures.
5. Will able to use patterns and have deeper knowledge of patterns.

UNIT –I Introduction:

What Is a Design Pattern? Design Patterns in Smalltalk MVC, Describing Design Patterns, The Catalog of Design Patterns, Organizing the Catalog, How Design Patterns Solve Design Problems, How to Select a Design Pattern, How to Use a Design Pattern.

UNIT-II

A Case Study: Designing a Document Editor :Design Problems, Document Structure, Formatting, Embellishing the User Interface, Supporting Multiple Look-and-Feel Standards, Supporting Multiple Window Systems, User Operations Spelling Checking and Hyphenation, Summary .

UNIT-III

Creational Patterns: Abstract Factory, Builder, Factory Method, Prototype, Singleton, Discussion of Creational Patterns.

Structural PatternPart-I: Adapter, Bridge, Composite

UNIT-IV

Structural PatternPart-II: Decorator, Façade, Flyweight, Proxy.

Behavioral PatternsPart-I : Chain of Responsibility, Command, Interpreter, Iterator.

UNIT-V

Behavioral Patterns Part-II: Mediator, Memento, Observer, State, Strategy, Template Method ,Visitor, Discussion of Behavioral Patterns. What to Expect from Design Patterns, A Brief History, The Pattern Community An Invitation, A Parting Thought.

TEXT BOOK :

1. Design Patterns By Erich Gamma, Pearson Education

REFERENCES :

1. Pattern's in JAVA Vol-I By Mark Grand ,Wiley DreamTech.
2. Pattern's in JAVA Vol-II By Mark Grand ,Wiley DreamTech.
3 JAVA Enterprise Design Patterns Vol-III By Mark Grand ,Wiley DreamTech.
4. Head First Design Patterns By Eric Freeman-Oreilly-spd5. Design Patterns Explained By Alan Shalloway,Pearson Education.

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(13CSE027) MULTI CORE TECHNOLOGIES
(Elective-IV)

Course Objectives:

1. Describe the parallelism techniques and scalability.
2. Explain basic concepts of multi core architectures and design issues for multi core technology.
3. Discuss parallel programming techniques that provide process synchronization.
4. Learn to use the OpenMP libraries.
   Understand multi core architectures its use in effective concurrent program performance.

Course Outcomes:

At the end of the course student should be able to:

1. Understand the concepts of high performance computer architecture and analyze the local and global impact of these technologies on individuals, organizations and society
2. Parallel programming for Shared Memory architecture using OpenMP libraries.
3. Explain different types of synchronization techniques.
4. Differentiate between software and hardware multithreading.
5. Design, implement and evaluate techniques for the creation of efficient multi core CPU programs.

UNIT-I

INTRODUCTION TO MULTIPROCESSORS AND SCALABILITY: Scalable design principles – Principles of processor design – Instruction Level Parallelism, Thread level parallelism. Parallel computer models –- Symmetric and distributed shared memory architectures – Performance Issues.

UNIT-II

Brief introduction to cache hierarchy and communication latency, Shared memory multiprocessors, General architectures and the problem of cache coherence.

SYNCHRONIZATION PRIMITIVES: Atomic primitives; locks: TTS, ticket, array; barriers: central and tree; performance implications in shared memory programs.

UNIT-III

MULTI-CORE ARCHITECTURES - Introduction to multi-core architectures -Software and hardware multi threading – SMT and CMP architectures –Design issues – Case

studies – Intel Multi-core architecture – SUN CMP architecture., issues involved into writing code for multi-core architectures, development of programs for these architectures, program optimizations techniques.

UNIT IV

PARALLEL PROGRAMMING: Fundamental concepts – Designing for threads – scheduling - Threading and parallel programming constructs – Synchronization – Critical sections – Deadlock. Threading, API's, OpenMP – Threading a loop – Thread overheads – Performance issues – Library functions. Solutions to parallel programming problems – Data races, deadlocks and live locks – Non-blocking algorithms – Memory and cache related issues.

UNIT-V

CHIP MULTIPROCESSORS: Why CMP (Moore's law, wire delay); shared L2 vs.tiled CMP; core complexity; power/performance; Snoopy coherence: invalidate vs. update, MSI, MESI, MOESI, MOSI; performance trade-offs; pipelined snoopy bus design; Memory consistency models: SC, PC, TSO, PSO, WO/WC, RC.

TEXTBOOKS:

1. Shameem Akhter and Jason Roberts, “Multi-core Programming”, Intel Press, 2006.
2. Michael J Quinn, Parallel programming in C with MPI and OpenMP, Tata Mcgraw Hill, 2003.

REFERENCES:

1. John L. Hennessey and David A. Patterson, “ Computer architecture – A quantitative approach”, Morgan Kaufmann/Elsevier Publishers, 4th. edition, 2007.
2. David E. Culler, Jaswinder Pal Singh, “Parallel computing architecture : A hardware/ software approach” , Morgan Kaufmann/Elsevier Publishers, 1999.

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(13CSE033)SOFTWARE METRICS
(Elective-IV)

Course Objectives

1. To be aware of Coremetricsfor product, quality, process
2. To familiarize with the concepts of Software quality and tools for quality metrics
3. To learn more about software reliability
4. To understand important concepts of complexity metrics and OOmetrics .

Course Outcomes

Upon completion of this course, students should be able to:

1 . Be aware of connections of software engineering measurements with the multidisciplinary history of measurement theory.
2 . Be aware of the social and ethical issues associated with human performance measurement .
3 . Assess the quality of a proposed metric.
4. Understand the commercial and organizational contexts of any metric.
5. Become familiar with several common measures, including the ability to calculate some of them.

UNITI

ITOrganization–theneedforMetrics–InterpretingtheMetrics–Managingthedata AcquiringITMetricsInformation–Limitations–AnalysisofOldDataVsNewData– GraphicalAnalysis–CoreofSoftwarePlanning–MeasuringCore Metrics(Product, Quality,ProcessProductivity)WorkOutputMeasurements.

UNITII

Software Development Process Models – Clean Room Methodology – Defect PreventionProcess– SoftwareProductivityResearchAssessment-MalcolmBridge Assessment–ISO9000– SoftwareQualityMetrics–DefectDensity–Customer SatisfactionMetrics–InProcessQualityMetrics.

UNITIII

Metrics for Software Maintenance – Ishikawa's seven basic tools – Their Use in SoftwareDevelopment– DefectRemovalEffectiveness– QualityPlanning–Cost Effectiveness ofPhase Defect Removal –Quality Management Models –Rayleigh Model–ReliabilityGrowthModel.

UNITIV

ProcessMetricsforSoftwareTesting–TestProgressScurveTestingDefectArrivals, backup,Overtime–CPUUtilizationduringtest–PossibleMetrics forAcceptance - TestingtoEvaluate.

UNITV

ComplexityMetricsandModels– Lines of Code– HalsteadSoftwareMetrics– CyclomaticComplexity–SyntacticConstructs–StructureMetrics–OOMetrics–CK OOMetricSuit– ProductivityMetrics–QualityandQualityManagementMetrics.

TEXTBOOKS AND REFERENCES:

1. Stephen H.Kan,“Metrics andModelsInSoftware QualityEngineering”, FirstEdition,PearsonEducation,2003.
2. ITMeasurement –APracticalAdvicefromtheExperts”,International
3. FunctionPointUsersGroup,PearsonEducation,Asia,2002(UnitI).