

**ACADEMIC REGULATIONS  
COURSE STRUCTURE AND  
DETAILED SYLLABUS**

**INFORMATION TECHNOLOGY**

**B.TECH. FOUR YEAR DEGREE COURSE**

(Applicable for the batches admitted from 2012-2013)



**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, New Delhi and Govt. of A.P & Affiliated to JNTUH**

**ACADEMIC REGULATIONS FOR B.TECH. DEGREE COURSE**

(Applicable for Students admitted from the academic year 2012-2013)

**1. Courses of study**

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

<b>Branch Code</b>	<b>Branch</b>
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.

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

### 1.1.1 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, 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 **50, 50, 50 and 200 marks** respectively.

ii. For theory subjects the distribution shall be **30 marks for Mid Semester Evaluation and 70 marks for the End-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. Two assignments are to be given to students covering the syllabus of first Mid and second Mid examinations and are evaluated for 5 marks each. .

The first assignment shall be submitted before first mid examinations and second Assignment should be submitted before 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 assignment marks

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 (two practical examinations will be conducted and the average of the two examinations will be taken into account) 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.**

- 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**. There shall be **two Mid examinations** in a Semester.
- V There shall be an **industry-oriented mini-Project**, in collaboration with an industry of their specialization, to be taken up during the a summer vacation after III year II Semester examination. The **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 **50 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 Midterm 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. Every student should attend shadow engineering programming an industry for a week days during second year I or II semester.
- 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 awarded 50 marks in which 40 marks will be evaluated for seminar report and 10 marks for MTP Record by the committee.**
- 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. 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 50 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.

#### (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 examiner may be appointed by the Chief Superintendent in consultation with HOD as and when required.

#### (c) Supplementary Examinations

Supplementary examinations will be conducted along with regular Semester end examinations.

(During even Semester regular examinations: supplementary examinations of odd Semester

and during odd Semester regular examinations: supplementary examinations of even Semester will be conducted).

### 4. Attendance Requirements

- i. A student shall be eligible to appear for the Semester end examinations if he acquires 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 in any Semester are not eligible to take their end semester examination of that Semester.
- vi. A stipulated fee shall be payable towards condonation of shortage of attendance.

### 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 fulfils the academic requirement of **37 credits from the following examinations,**
    - Two regular and one supplementary examinations of I year I Semester
    - One Regular and One Supplementary exam of I year II Semester
    - one regular examination of II year I Semester irrespective
  - iii. A student shall be **promoted from III year to IV year** only if he fulfils the academic requirements of total 62 **credits from the following examinations,**
    - Three regular and Two supplementary examinations of I B Tech I Semester.
    - Two regular and two Supplementary examinations for I B Tech II Semester
    - Two regular and one supplementary examinations up to the end of II year I Semester.
    - One regular and one supplementary examinations of II year II Semester.
    - One regular examination of III year I Semester.
  - iv. A student shall register and put up minimum academic requirement in all 200 credits and earn the 200 credits. Marks obtained in all 200 credits shall be considered for the calculation of Cumulative Grade Point Average (**CGPA**).
  - v. In addition to the above 200 credits the student must complete the non credit courses also. The non-credit courses awarded with a grade of satisfactory or not satisfactory based on the attendance of the student. Minimum attendance for the non-credit course is 75%.
  - vi. The student should also register and complete any two value added courses offered by the Institute.
  - vii. Students who fail to earn 200 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 stands cancelled.**
- 6. Course pattern**
- i. The entire course of study is of four academic years. **All the 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 to be promoted or for promotion into the next year after fulfillment of the academic requirements, **with the academic regulations of the batch into which he gets admitted**

**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 **200 credits and other Academic Requirements** .
- iii) complete the non-credit courses and value added courses as per their course structure.

**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
<b>&gt;=90</b>	<b>O</b>	<b>Outstanding</b>	<b>10.00</b>
<b>&gt;=80 and &lt;89.99</b>	<b>A+</b>	<b>Excellent</b>	<b>9.00</b>
<b>&gt;=70 and &lt;79.99</b>	<b>A</b>	<b>Very Good</b>	<b>8.00</b>
<b>&gt;=60 and &lt;69.99</b>	<b>B</b>	<b>Good</b>	<b>7.00</b>
<b>&gt;=50 and &lt;59.99</b>	<b>C</b>	<b>Fair</b>	<b>6.00</b>
<b>&gt;=40 and &lt;49.99</b>	<b>D</b>	<b>Pass</b>	<b>5.00</b>
<b>&lt;40</b>	<b>F</b>	<b>Remedial</b>	
<b>Not Appeared the Exam(s)</b>	<b>N</b>	<b>Absent</b>	

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

CGPA	CLASS
$\geq 7.5$	First Class with Distinction
$\geq 6.5$ and $< 7.5$	First class
$\geq 5.5$ and $< 6.5$	Second Class
$\geq 5.0$ and $< 5.5$	Pass class

mentioned in the Table.

#### 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:

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

$$SGPA = \frac{\sum_{i=1}^P C_i * G_i}{\sum_{i=1}^P C_i}$$

Where 'C<sub>i</sub>' = Number of Credits allotted to particular subject 'i'

'G<sub>i</sub>' = 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.

$$CGPA = \frac{\sum_{i=1}^m C_i * G_i}{\sum_{i=1}^m C_i}$$



Where  $C_i$  = Number of credits allotted to a particular subject 'i'

$G_i$  = Grade Point corresponding to the letter grade awarded in that subject 'i'

$i = 1, 2, \dots, m$  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 and he will not be allowed to go into the next higher Semester. 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 Institute Academic Committee.

### **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 procedure for permitting students to transfer from**

**other colleges will be decided by the principal / Institute Academic Committee keeping the Government Rules in view.**

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

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

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

- (i) A student shall register for all 150 credits and earn all the 150 credits. Marks obtained in all 150 credits shall be considered for the calculation of the class.
- (ii) A student who fails to earn 150 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 37 credits from the following examinations.
  - a. Two regular and one supplementary examination of II year I Semester
  - b. One regular and one supplementary examination of II year II Semester
  - c. One regular examination of III year I Semester.In case of getting detained for want of credits the student may make up the credits through supplementary exams of the above exams before the date of commencement of class work for IV year I Semester.
- (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

	<b>Nature of Malpractices/Improper conduct</b>	<b>Punishment</b>
	<b>If the candidate:</b>	
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

		<p>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.</p>
4.	<p>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.</p>	<p>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.</p>
5.	<p>Uses objectionable, abusive or offensive language in the answer paper or in letters to the examiners or writes to the examiner requesting him to award pass marks.</p>	<p>Cancellation of the performance in that subject.</p>

6.	<p>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.</p>	<p>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.</p>
7.	<p>Leaves the exam hall taking away answer script or intentionally tears of the script or any part thereof inside or outside the examination hall.</p>	<p>Expulsion from the examination hall and cancellation of performance in that subject and all the other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester/year. The candidate is also debarred for two consecutive semesters from class work and all University examinations. The continuation of the course by the candidate is subject to the academic regulations in connection with forfeiture</p>

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

## **DEPARTMENT OF INFORMATION TECHNOLOGY**

### **VISION**

Promote a stimulating and productive environment of work, study, and interactive learning for students and staff

### **MISSION**

Inculcate the value of learning, self-worth and quality performance among students and staff, and transition of students for productive and responsible participation in society



**Programme Educational Objectives (PEOs):**

- I. To provide students with a solid foundation in the scientific, mathematical, and Engineering fundamentals necessary to formulate, analyze, solve engineering problems.
- II. To prepare students to meet the challenges in IT Industry regarding Analysis, Design and Development of various types of Projects that meet the needs of National and Global Companies, and also to prepare them for pursuing higher studies and research.
- III. To develop the understanding for specification, planning, designing, implementation and deployment of software project by providing the sufficient knowledge of Software Engineering, Modeling, Security and Information Retrieval Systems.
- IV. Ability to enhance the analytical skills of the students with the faculty expertise by bringing the real world into labs through a specially designed VNR protocol. And also enlarging the technological horizon of students beyond curriculum through seminars, and workshops.
- V .To organize special training programmes on modern IT skills to pursue certification courses through Oracle, Computer Network Certification.
- VI. To train students with broader scientific and engineering knowledge by providing multidisciplinary courses with emphasis on Digital, Microprocessor and embedded systems, so as to achieve ability to comprehend, analyze, design and create novel products with innovative ideas.
- VII. To develop effective communication skills, managerial skills, team spirit, multi disciplinary approach with social commitment and optimal utilization of resources as an IT professional.
- VIII. Ability to convert innovative ideas in to high end projects and to convert it into a marketable product in collaboration with industry by providing with the sufficient knowledge of Cloud Computing, Virtualization, and Web 2.0.
- IX. IT Professional endeavors enable the graduate to meet the legal and ethical responsibilities and to engage in life-long learning, to advance the economic and social development at the National and global levels through technology transfer.

## **Program Outcomes (POs):**

The program demonstrates that the graduate is

- a) Graduates will have an understanding of the fundamental mathematical, logical, statistical, and scientific principles, emphasizing computing and information processing.
- b) An ability to identify and analyze the user needs and take them in to account for Selection, Creation, Evaluation and Administration of Computer-based systems like –Institute Management, Cart and Inventory Management.
- c) The core competence in the field of IT addresses a wide range of strategic, managerial and operational activities involved in gathering, processing, storing, distributing and use of information, and its associated technologies like SE, OS, WT, DBMS, CN, in developing applications for various organizations.
- d) Graduate will demonstrate an ability to visualize and work on laboratory to understand the performance of different types of projects .
- e) Through VNR protocols, students are able to acquire in depth knowledge and can apply this mode of inquiry in an application development like search engine.
- f) Ability to acquire and apply fundamental principles of electronics, microprocessor , microcontrollers and embedded Systems.
- g) Graduate to be a multi-skilled engineer with good technical knowledge in robotics and automation fields to develop knowledge based systems.
- h) Ability to understand software engineering principles and apply them to design, develop, implement and deploy with extensive security features.
- i) Students to engage actively in research, consulting, and/or other professional activities, both to advance individual professional competence and to integrate new knowledge into the educational programs like Oracle Workforce Development plan.
- j) Develop a sense of personal responsibility and accountability for one's individual actions and performance. Apply personal goal setting, decision making skills, and time management concepts.
- k) Work effectively in teams with people of diverse backgrounds at all corporate levels.
- l) Graduates able to develop "win-win" approaches for conflict resolution and assess feasibility, risk of the projects.

- m) Students can apply information technology principles and practices to a variety of problems, with the understanding of social, professional, and ethical issues related to computing.
- n) Ability to update his knowledge with the latest technologies by involving in distinct domain projects like web OS.
- o) Recognize the need for continued learning by participating and succeeding in competitive examinations like GATE, GRE,CAT and also pursue research.

VNR Vignana Jyothi Institute of Engineering & Technology

B. TECH Information Technology

(R12)

I YEAR I SEMESTER

COURSE STRUCTURE

Subject Code	Subject Name	Lectures	T/P/D	Credits
MTH1101	Mathematics – I	3	1	3
PHY1101	Engineering Physics	3	1	3
CHE1101	Engineering Chemistry	3	0	3
ENG1101	English	3	0	3
CSE1101	Computer Programming	3	0	3
EEE1152	Basic Electrical Engineering	4	0	4
ENG1201	English Language Communication Skills Laboratory-1	0	3	2
CSE1201	Computer Programming Laboratory	0	3	2
EPC1201	Engineering Physics & Engineering Chemistry Laboratory	0	3	2
<b>Total</b>		<b>19</b>	<b>11</b>	<b>25</b>

VNR Vignana Jyothi Institute of Engineering & Technology

B. TECH Information Technology

I YEAR II SEMESTER

COURSE STRUCTURE

Subject Code	Subject Name	Lectures	T/P/D	Credits
MTH1102	Mathematics – II	3	1	3
MTH1104	Numerical Analysis and Linear Programming	3	1	3
PHY1104	Applied Physics	3	1	3
CED1105	Environmental Studies	3	1	3
ITD1102	Data Structures	3	0	3
MED1105	Engineering Drawing	2	4	4
MED1202	Workshop Practice	0	3	2
ITD1202	Data Structures Laboratory	0	3	2
ENG1202	English Language Communications Skills Laboratory-II	0	3	2
<b>Total</b>		<b>17</b>	<b>17</b>	<b>25</b>

**VNR Vignana Jyothi Institute of Engineering & Technology**

**B. TECH Information Technology  
(R12)**

**II YEAR I SEMESTER**

**COURSE STRUCTURE**

<b>Subject Code</b>	<b>Subject Name</b>	<b>Lectures</b>	<b>T/P/D</b>	<b>Credits</b>
MTH1106	Probability and Statistics	3	1	3
ECE1158	Basic Electronics	3	1	3
ITD1103	Advanced Data Structures	4	1	4
CSE1122	Mathematical Foundation for Computer Science	3	0	3
CMS1101	Business Economics and Financial Analysis	4	0	4
CSE1102	Digital Logic Design	4	0	4
ITD1203	Advanced Data Structures Laboratory	0	3	2
ECE1252	Basic Electronics Laboratory	0	3	2
NCC1101	Human Values and Professional Ethics	2	<b>Non Credit Audit Course</b>	
<b>Total</b>		<b>23</b>	<b>9</b>	<b>25</b>

**VNR Vignana Jyothi Institute of Engineering & Technology**

**B. TECH Information Technology**

**II YEAR II SEMESTER**

**COURSE STRUCTURE**

<b>Subject Code</b>	<b>Subject Name</b>	<b>Lectures</b>	<b>T/P/D</b>	<b>Credits</b>
CSE1103	Formal Languages and Automata Theory	4	0	4
CSE1104	Principles of Programming Languages	3	1	<b>3</b>
ITD1104	Computer Organization	4	0	4
CSE1105	Design and Analysis of Algorithms	3	1	<b>3</b>
CSE1106	Database Management Systems	4	0	4
ITD1105	Object Oriented Programming through JAVA	3	1	<b>3</b>
CSE1202	Database Management Systems Laboratory	0	3	2
ITD1204	Object Oriented Programming through JAVA Laboratory	0	3	2
<b>Total</b>		<b>21</b>	<b>9</b>	<b>25</b>

VNR Vignana Jyothi Institute of Engineering & Technology

B. TECH Information Technology  
(R12)

III YEAR I SEMESTER

COURSE STRUCTURE

Subject Code	Subject Name	Lectures	T/P/D	Credits
CSE1107	Software Engineering	4	0	4
ECE1109	Microprocessors and Microcontrollers	4	0	4
ITD1106	Computer Networks	4	0	4
CSE1109	Compiler Design	4	1	4
ITD1107	Operating Systems	3	1	3
ITD1205	Operating Systems & Computer Networks Laboratory	0	3	2
ECE1206	Microprocessors and Microcontrollers Laboratory	0	3	2
ENG1204	Advanced English Communication Skills Laboratory	0	3	2
<b>Total</b>		<b>19</b>	<b>11</b>	<b>25</b>



**VNR Vignana Jyothi Institute of Engineering & Technology**

**B. TECH Information Technology**

**III YEAR II SEMESTER**

**COURSE STRUCTURE**

<b>Subject Code</b>	<b>Subject Name</b>	<b>Lectures</b>	<b>T/P/D</b>	<b>Credits</b>
ITD1108	Software Testing Methodologies	4	0	4
CSE1111	Data Warehousing and Data Mining	3	1	3
ITD1109	Linux Programming	4	1	4
ECE1156	Data Communication Systems	3	1	3
CSE1110	Object Oriented Analysis and Design	4	0	4
<b>Open Elective</b>				
ITD1126	Green IT	3	0	3
CED1147	Disaster Management			
MED1160	Introduction to Operations Research			
CSE1121	Cyber Security			
ITD1206	Object Oriented Analysis and Design and Software Testing Laboratory	0	3	2
ITD1207	Linux Programming & Data Mining Laboratory	0	3	2
NCC1102	Soft Skills and Personality Development	2	<b>Non Credit Audit Course</b>	
<b>Total</b>		<b>23</b>	<b>9</b>	<b>25</b>

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

**VNR Vignana Jyothi Institute of Engineering & Technology**  
**B. TECH Information Technology**

**IV YEAR I SEMESTER**

**COURSE STRUCTURE**

<b>Subject Code</b>	<b>Subject Name</b>	<b>Lectures</b>	<b>T/P/D</b>	<b>Credits</b>
ITD1110	Web Technologies	3	1	3
CMS1102	Management Science	4	0	4
ITD1119	Distributed Systems	3	0	3
ITD1112	Mobile Application Development	3	1	3
<b>Elective – I</b>				
ITD1113	Network Management Systems	3	0	3
ITD1114	Building Enterprise Applications			
ITD1115	Computer Graphics			
CSE1117	Software Project Management			
<b>Elective – II</b>				
ITD1116	Computer Forensics	3	0	3
CSE1112	Cryptography and Network Security			
CSE1116	Design Patterns			
ITD1118	Wireless & Mobile Computing			
ITD1208	Web Technologies Laboratory	0	3	2
ITD1209	Mobile Application Development Laboratory	0	3	2
ITD1301	Industry Oriented Mini Project	0	6	2
<b>Total</b>		<b>19</b>	<b>14</b>	<b>25</b>

**VNR Vignana Jyothi Institute of Engineering & Technology**

**B. TECH Information Technology**

**IV YEAR II SEMESTER**

**COURSE STRUCTURE**

<b>Subject Code</b>	<b>Subject Name</b>	<b>Lectures</b>	<b>T/P/D</b>	<b>Credits</b>
CSE1114	Soft Computing	3	1	3
<b>Elective – III</b>				
CSE1115	Advanced Computer Architecture			
ITD1121	Information Retrieval Systems	3	0	3
CSE1119	Business Intelligence Applications			
ECE1113	Digital Image Processing			
<b>Elective – IV(Inter Departmental Elective)</b>				
ITD1122	Cloud Computing			
ECE1124	Embedded Real Time Operating Systems	3	0	3
ECE1155	VLSI System Design			
EIE1118	Robotics and Automation			
ITD1302	Technical Seminar	0	3	2
ITD1303	Comprehensive Viva	0	3	2
ITD1304	Project Work	0	18	12
<b>Total</b>		<b>09</b>	<b>25</b>	<b>25</b>

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

**VNR Vignana Jyothi Institute of Engineering & Technology**

**I Year B.Tech– I Sem**

L	T/P/D	C
3	1	3

**(MTH1101) MATHEMATICS – I**  
**(Advanced Calculus)**

**UNIT I**

**Differential Calculus**

Mean value theorems - Rolle's theorem, Lagrange's theorem, Cauchy's theorem, and generalized mean value theorem (Taylor's Theorem) (statements only), Curvature and Radius of curvature, Curve tracing – Cartesian, polar and parametric curves (standard curves only)

**UNIT II**

**Functions of Several Variables**

Partial differentiation; Euler's theorem, Functional dependence; Jacobian; Maxima and Minima of functions of two variables with constraints and without constraints.

**UNIT III**

**Improper integrals and Multiple integrals**

Improper Integrals; Beta, Gamma, and Error integrals - Properties and simple applications. Applications of integration to lengths, volumes and surface areas in cartesian and polar coordinates. Multiple integrals - double and triple integrals, change of variables (Cylindrical and Spherical polar coordinates) and change of order of integration.

**UNIT-IV**

**Vector calculus**

Introduction to vector and scalar functions; gradient, curl, divergence, and their related properties of sums and products; Laplacian and second order operators; Vector integration - line integral, work done, potential function; Area, surface, and volume integrals; Statements of Vector integral theorems and their verification (without proofs) - Green's theorem, Stoke's theorem, and Gauss divergence theorem.

**UNIT V**

**Elementary analysis**

Sequences and series - convergence and divergence, ratio test, comparison test, integral test, Cauchy's root test, Raabe's test (statements only for the tests), and absolute and conditional convergence.

**TEXT BOOKS**

1. Calculus and Analytic Geometry by Thomas and Finney, 9<sup>th</sup> edition; Publisher: Pearson Education.
2. Higher Engineering Mathematics – by Dr.B. S. Grewal, 40<sup>th</sup> edition, Publisher: Khanna Publishers.
3. Schaum's Outline of Vector Analysis by Murray R. Spiegel (2011); 2nd edition; Publisher: Tata McGraw Hill.

**REFERENCES**

1. Elementary Analysis: The Theory of Calculus by Kenneth Ross; Publisher: Springer
2. Advanced Engineering Mathematics by Erwin Kreyszig, 8<sup>th</sup> edition; Publisher: John Wiley.

## VNR Vignana Jyothi Institute of Engineering & Technology

### AUTONOMOUS UNDER UGC

I Year B.Tech– I Sem	L	T/P/D	C
	3	1	3

### (PHY1101)ENGINEERING PHYSICS

#### UNIT I: 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 II: 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 III: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 IV: 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 V: 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 Buddha; University Press
- (5) Elements of Solid State Physics by J.P.Srivatsva, PHI Publishers
- (6) Engineering Physics by Dr M Chandra Shekar and Dr P. Appala Naidu, VGS Book links.
- (7) Introduction to Optical Communication by G. Keiser
- (8) Quantum Mechanics by Gupta Kumar Sharma

## VNR Vignana Jyothi Institute of Engineering & Technology

I B.Tech CSE, IT – I Sem	L	T/P/D	C
CE, ME, AE, ECE, EEE, EIE – II sem	3	0	3

### (CHE1101) ENGINEERING CHEMISTRY

#### 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

##### 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 - Nb-Sn alloy,  $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$ ; 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; Publisher: 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  
Hyderabad**

<b>I Year B.Tech-I Sem (Common to all Branches)</b>	<b>L</b>	<b>T/P/D</b>	<b>C</b>
	<b>3</b>	<b>0</b>	<b>3</b>

**(ENG1101) 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.

**Objectives:**

- i) To equip the students with all the LSRW skills for advanced writing and speaking.
- ii) To equip the students with basic grammar, infrastructural patterns and grammatical constructions required of in technical writing.
- iii) To acquaint the students with the writing process, beginning with paragraph writing. This would prepare them for academic and workplace writing.
- iv) Equip the students with Oral Communication Skills.

**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
  - iv) Adverbs
  - v) Use of Articles and Prepositions
  - vi) Conjunctions
  - vii) pronoun reference
- iv) Transitional elements

### **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

### **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. 3<sup>rd</sup> 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/>
4. Neufeld, J.K. 1987; A Handbook for Technical Communication, Prentice-Hall, Inc. pp.20,65-68

5. Yalden, J. 1987; Principles of Course Design for Language Teaching, Cambridge University Press
6. David F. Beer and David McMurrey, Guide to Writing as an Engineer, 2<sup>nd</sup> ed., Wiley, 2004, ISBN: 0471430749.
7. Greaney, G.L. 1997; Less is More: Summary Writing and Sentence Structure in the Advanced ESL Classroom, The Internet TESL Journal, Vol.III, No.9 <http://iteslj.org/Techniques/Greaney-Writing.html>

## VNR Vignana Jyothi Institute of Engineering and Technology

I Year B.Tech CSE , IT,ECE,EEE,EIE – I Sem

L	T/P/D	C
3	0	3

### (CSE1101) COMPUTER PROGRAMMING

#### UNIT - I

Computer fundamentals-Hardware, software, computer language , translators, Program Development steps-Algorithms, Pseudo code, flow charts, 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.Gilberg
2. C How to Program Paul Deitel and Harvey Deitel , PH
3. 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 and Technology

I Year B.Tech. – I –SEM IT/ CSE

T	P	C
4	0	4

### (EEE1152) BASIC ELECTRICAL ENGINEERING

#### UNIT – I

**Introduction to Electrical Engineering:** Basic circuit components, types of elements, Ohm's law, types of sources, Kirchhoff's laws, resistive networks, inductive networks, capacitive networks, star-delta and delta-star transformation, simple problems.

#### UNIT-II

**Alternating Quantities:** Principle of ac voltages, waveforms and basic definitions, root mean square and average values of alternating currents and voltages, form factor and peak factor, phasor representation of alternating quantities, the J operator and phasor algebra, analysis of ac circuits with single basic network element, single phase series circuits, simple problems.

#### UNIT-III

**Direct current machines:** Principle of operation and construction of a dc machine, e.m.f equation, Torque production in a dc machine, Types of DC machines (All the above topics are only qualitative treatment).

#### UNIT-IV

**Transformers:** Principle of operation, Constructional Details, Ideal Transformer and Practical Transformer, Losses, Open circuit and short circuit Tests, Efficiency and Regulation (All the above topics are only elementary treatment and simple problems).

#### UNIT V

**A.C Machines:** Three phase induction motor: principle of operation, slip and rotor frequency, torque (simple problems). Synchronous Motor: Principle of operation, EMF equation (Simple problems).

#### TEXT BOOKS:

1. Basic Electrical Engineering - By M.S.Naidu and S. Kamakshiah – TMH.
2. Basic Electrical Engineering –By T.K.Nagasarkar and M.S. Sukhija Oxford University Press.
3. Electrical and Electronic Technology – By Hughes- Pearson Education.

#### REFERENCES :

1. Theory and Problems of Basic Electrical Engineering by D.P.Kothari & I.J. Nagrath PHI.
2. Principles of Electrical Engineering by V.K Mehta, S.Chand Publications.
3. Essentials of Electrical and Computer Engineering by David V. Kerns, JR. J. David Irwin Pearson.
4. Electrical circuits by Sudhkar and Shyam Mohan-TMH

**VNR Vignana Jyothi Institute of Engineering & Technology**

**I Year B.Tech –I Sem (Common to CSE, IT, ME, AME) L T/P/D C**  
**0 3 2**

**(ENG1201) ENGLISH LANGUAGE COMMUNICATION SKILLS LABORATORY -I**

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.

**Syllabus for Lab Sessions**

**Unit 1**

**Multimedia Lab**

1. Sounds of English
2. Listening Comprehension
3. Vocabulary Lesson 1

**Communication Skills Lab:** Introduction of Self and others

**Unit 2**

**Multimedia Lab**

1. Grammar ---Nouns and Pronouns; The Present Tense
2. Vocabulary Lesson 2
3. Listening Skills

**Communication Skills Lab:** Seeking and Giving Information

**Unit 3**

**Multimedia Lab**

1. Grammar --- Articles; The Past Tense
2. Vocabulary Lesson 3
3. Telephoning Skills

**Communication Skills Lab:** Giving and Taking Instructions

**Unit 4**

**Multimedia Lab**

1. Grammar ---- Concord; The Future Tense
2. Vocabulary Lesson 4
3. Listening Comprehension

**Communication Skills Lab:** Role Play/ Situational Dialogues

**Unit 5**

**Multimedia Lab**

1. Grammar --- Adjectives, adverbs, conjunctions
2. Vocabulary -- Lesson 5

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



## **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.

**System Requirement (Hardware component):**

Computer network with Lan with minimum 60 multimedia systems with the following specifications:

**iv) P – IV Processor**

- a) Speed – 2.8 GHZ
- b) RAM – 512 MB Minimum
- c) Hard Disk – 80 GB
- v) Headphones of High quality

## **5. Suggested Software:**

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

**Suggested Software:**

- **Clarity Pronunciation Power** – part II
- **Oxford Advanced Learner's Compass**, 7th Edition
- **DELTA's key to the Next Generation TOEFL Test: Advanced Skill Practice.**
- **Lingua TOEFL CBT Insider**, by Dreamtech
- **TOEFL & GRE** (KAPLAN, AARCO & BARRONS, USA, Cracking GRE by CLIFFS)

## **Multimedia Lab Requirements**

**Minimum Requirement:**

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## VNR Vignana Jyothi Institute of Engineering and Technology

I Year B.Tech CSE , IT,ECE,EEE,EIE – I Sem	L	T/P/D	C
	0	3	2

### (CSE1201) COMPUTER PROGRAMMING LABORATORY

#### Week 1

- Basic Linux commands
- 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

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

- Programs on nested loops – check for Fibonacci prime, Pyramids of numbers, generation of prime numbers in the given range, multiplication table etc
- programs using break, goto, continue.

#### Week 6

- Programs on 1-D array-finding Minimum and maximum element ,Sorting and Searching etc.
- Programs on 2-D array – Sum, product and Multiplication of two Matrices etc.

#### Week 7

- Programs on Functions-Implementation of user defined functions categories, passing of arrays to functions etc.
- Programs on recursion - factorial of a given integer, GCD of two given integers etc.

#### Week 8

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

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

(EPC1201) ENGINEERING PHYSICS & CHEMISTRY LAB COURSE

**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

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

**LIST OF EXPERIMENTS**

**1. Titrimetry**

- a) Estimation of hardness of water by EDTA method.

**2. Instrumental methods**

**(i) Conductometry**

- a) Conductometric titration of strong acid vs strong base

**(ii) Colorimetry**

- a) Estimation of copper by colorimetric method

**(iii) pH metry**

- a) Titration of strong acid vs strong base by pH metry

**3. Physical properties**

- a) Determination of viscosity of sample oil by Redwood viscometer.

**4. Preparations:**

- a) Preparation of soap
- b) Preparation of Nano particles.

**TEXT BOOKS**

1. Laboratory Manual on Engineering Chemistry by S.K.Bhasin and Sudha Rani; Publisher: Dhanpat Rai.
2. Laboratory Manual on Engineering Chemistry by Y.Bharathi Kumari and Jyotsna Cherukuri; Publisher: VGS Book Links.

VNR Vignana Jyothi Institute of Engineering & Technology

I Year B.Tech ME & AE – II Sem

L	T/P/D	C
3	1	3

(MTH1102) MATHEMATICS – II

(Linear Algebra and Ordinary Differential Equations)

LINEAR ALGEBRA

**UNIT I**

**Solution of linear systems**

Matrices and linear systems of equations - elementary row transformations, Rank, row Echelon form, and normal form; Solution of linear systems - direct methods - LU decomposition, LU decomposition from Gauss elimination, and solution of Tri-diagonal systems by Thomas algorithm; Eigen values, eigen vectors, and their properties - Linear dependence and independence; Cayley-Hamilton theorem (without proof) - inverse and powers of a matrix by Cayley-Hamilton theorem, diagonalization of a matrix, calculation of powers of a matrix; Modal and spectral matrices.

**UNIT II**

**Linear transformations**

Real matrices - symmetric, skew symmetric, and orthogonal linear transformation; Complex matrices - Hermitian, Skew-Hermitian and unitary matrices; Quadratic forms - reduction of quadratic form to canonical form, rank, positive, negative definite, semi definite, index, signature, Sylvester law, and singular value decomposition.

ORDINARY DIFFERENTIAL EQUATIONS

**UNIT III**

**Ordinary differential equations and their applications**

Differential equations of first order and first degree - Linear, Bernoulli and exact 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.

**UNIT IV**

**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  $x$ ,  $e^{ax} V(x)$ ,  $V(x)$ , and method of variation of parameters and Euler-Cauchy's 2<sup>nd</sup> order differential equations, applications to mechanical systems and Simple harmonic motion.

## **UNIT V**

### **Laplace transform and application to ODE**

Laplace transform of standard functions; Inverse transform-first shifting theorem; Dirac's delta function; Convolution theorem; Periodic function; Differentiation and integration of transforms; Application of Laplace transforms to ordinary differential equations.

### **TEXT BOOKS**

1. Differential Equations, with Applications and Historical Notes by George F. Simmons and John S. Robertson (2008) 2<sup>nd</sup> Edition; Publisher: Tata McGraw Hill.
2. A First Course in Differential Equations by Dennis G. Zill; Publisher: Brooks Cole.
3. Advanced Engineering Mathematics by Dennis G. Zill, Warren S. Wright, and Michael R. Cullen, 4<sup>th</sup> edition; Publisher: Jones & Bartlett Learning.

### **REFERENCES**

1. Advanced Engineering Mathematics by Erwin Kreyszig, 8<sup>th</sup> edition; Publisher: John Wiley.
2. Advanced Engineering Mathematics by Peter V. O'Neil, 9<sup>th</sup> Edition; Publisher: Cengage Learning.
3. Elementary Differential Equations and Boundary Value Problems by William E. Boyce and Richard C. DiPrima; Publisher: Wiley.
4. Linear Algebra and its applications by David C Clay; Publisher: Pearson Education.



## VNR Vignana Jyothi Institute of Engineering & Technology

I Year B.Tech CSE&IT – II Sem

L	T/P/D	C
3	1	3

### (MTH1104) NUMERICAL ANALYSIS AND LINEAR PROGRAMMING

NUMERICAL ANALYSIS

#### UNIT I

##### Solutions of non-linear systems

Introduction; Mathematical preliminaries; Solution of algebraic and transcendental equations – the bisection method, the method of false position, the iteration method, 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; Cubic spline interpolation.

#### UNIT III

##### 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 Moulton method, and Milne's method.

#### UNIT IV

##### Numerical solutions of partial differential equations (PDE)

Introduction; Classification of second order PDE; Approximation of derivatives by finite difference method; Solution of Laplace equation - Jacobi's method, Gauss-Seidal (Leibmann's) method, Solution of parabolic equations by explicit and crank Nicolson implicit scheme method; Solution of hyperbolic equations. LINEAR PROGRAMMING

#### UNIT V

##### Linear programming

linear programming - Basic concepts; -problem formulation, graphical method, canonical and standard forms of LPP simplex method, Artificial variables techniques- M method, Transportation problems: Balanced transportation problem-North-West corner rule, Least cost method, Vogel's approximation method and MODI method.

## **TEXT BOOKS**

1. Elementary Numerical Analysis – an algorithmic approach by Samuel D. Conte and Carl De Boor (2006); 3<sup>rd</sup> edition; Publisher: Tata McGraw Hill.
2. Elementary Numerical Analysis by Dr. B.S.Grewal, 4<sup>th</sup> edition, Publisher: Khanna Publishers
3. Operations Research: Theory and Applications by Kanthi Swaroop, 4<sup>th</sup> edition, Macmillan Publishers India Ltd.

## **REFERENCES**

1. Advanced Engineering Mathematics by Erwin Kreyszig, 8<sup>th</sup> Edition; Publisher: John Wiley and Sons.
2. Advanced Engineering Mathematics by Peter V. O'Neil, 9<sup>th</sup> Edition; Publisher: Cengage Lear

## VNR Vignana Jyothi Institute of Engineering & Technology

I Year B.Tech CSE&IT – II Sem

L	T/P/D	C
3	1	3

### (PHY1104) APPLIED PHYSICS

(Common for CSE & IT)

#### 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 Polarizabilities – Frequency dependence of Polarization- Internal fields – Clausius – 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 Dr M Chandra Shekar and Dr P. Appala Naidu, VGS Book links.
2. Engineering Physics by G Sahashra Buddhe; University Press
3. Quantum Mechanics by Gupta Kumar Sharma
4. Elements of Solid State Physics by J.P.Srivatsva, PHI Publishers
5. Engineering Physics by M.R.Srinivasan, New Age Publishers
6. Solid State Physics by M.A. Wahab.

## VNR Vignana Jyothi Institute of Engineering & Technology

<b>I Year B. Tech- II Sem</b>	<b>L</b>	<b>T/P/D</b>	<b>C</b>
<b>(Common to all branches)</b>	<b>3</b>	<b>1</b>	<b>3</b>

### **(CED1105) ENVIRONMENTAL STUDIES**

#### **UNIT-I**

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. Introduction to Environmental Science by Y.Anjaneyulu, BS Publications
2. Text book of Environmental studies by Deeksha dave, Cengage publishers
3. Text book of Environmental studies by M.Anji Reddy, BS Publications

**REFERENCES:**

1. Text book of Environmental studies by Anuba Kaushik & C P Kaushik, Newage International Pvt.Limited
2. Text book of Environmental studies by S V S Rana, Rastogi Publications
3. Text book of Environmental studies by Dr. K Raghavan Nambiar, Scitech Publishers

## VNR Vignana Jyothi Institute of Engineering & Technology

I Year B.Tech CSE , IT,ECE,EEE,EIE – II Sem

L	T/P/D	C
3	0	3

### (ITD1102) DATA STRUCTURES

#### UNIT-1

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 – 2

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

#### UNIT-3

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

#### UNIT-4

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

Graphs – Definitions, Graph representations, Graph traversals.

#### UNIT-5

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

#### REFERENCES:

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.

## VNR Vignana Jyothi Institute of Engineering and Technology

I Year B.Tech-II Sem

L	T/P/D	C
2	4	4

### (MED 1105) ENGINEERING DRAWING (Common to EEE, ECE, EIE, CSE & IT)

#### UNIT – I

Introduction to engineering graphics – construction of ellipse, parabola and hyperbola – cycloidal curves.

#### UNIT – II

Orthographic projections of points, lines and planes – axis inclined to one planes and inclined to both the planes.

#### UNIT – III

##### Orthographic projections of solids:

Cylinder, cone, prism, pyramid and sphere positions and axis inclined to both the planes.

#### UNIT – IV

Isometric Scale, Isometric drawing and Isometric projections of lines, planes and simple solids.

#### UNIT – V

Conversion of orthographic views into isometric views for simple objects. Construction of orthographic projections for given isometric projections.

#### TEXT BOOKS :

1. Engineering drawings By N.D.Bhatt.
- 2 Engineering graphics By K.L. Narayana and P.Kannayya.

#### REFERENCES:

1. Engineering drawing and graphics: Venugopal/ New age
2. Engineering drawing : Johle / TMH



## VNR Vignana Jyothi Institute of Engineering and Technology

I Year B.Tech CSE & IT – II Sem

L	T/P/D	C
0	3	2

### (MED1202) WORKSHOP PRACTICE

(8 + 8 Weeks)

#### TRADES FOR EXERCISES

At least two exercises from each trade:

1. Carpentry
2. Fitting
3. Welding
4. Electrical Wiring
5. Lathe Operations

#### IT WORK SHOP EXERCISES

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. Work shop Manual - P.Kannaiah/ K.L.Narayana, Scitech Publishers.
2. Workshop Manual by Venkat Reddy.
3. Engineering Workshop Practice – V Ramesh Babu, VRB Publishers Pvt. Ltd.
4. IT Essentials PC Hardware and Software Companion Guide Third Edition by Davis Anfinson and Ken Quamme – CISCO Press, Pearson Education.
5. PC Hardware and A+ Handbook – Kate J. Chase PHI (Microsoft)

**VNR Vignana Jyothi Institute of Engineering & Technology**

**I Year B.Tech CSE , IT,ECE,EEE,EIE – II Sem**

**L T/P/D C**

**0 3 2**

**(ITD1202) DATA STRUCTURES LABORATORY**

**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:**

1. Write a program for creation, Search and Traversal of Circular Linked List
2. Write a program to perform insertion and deletion operations in Circular Linked List

**WEEK 3:**

1. Write a program for creation, Search and Traversal of Double Linked List
2. Write a program to perform insertion and deletion operations in Double Linked List

**WEEK 4:**

1. Write a program to implement stack using Arrays
2. Write a program to implement stack using Linked List

**WEEK 5:**

1. Write a program to convert infix expression to postfix expression using stack
2. Write a program to evaluate postfix expression

**WEEK 6:**

1. Programs using recursion
2. Write a program to convert infix expression to prefix expression using stack

**WEEK 7:**

1. Write a program to implement Linear queue using Array
2. Write a program to implement Linear queue using Linked List

**WEEK 8:**

1. Write a program to implement insertions and deletions in a circular Queue
2. Write a program to perform search and count operations in a circular queue

**WEEK 9:**

1. Write a program to implement insertions and deletions in a Dequeue
2. Write a program to perform search and count operations in Dequeue

**WEEK 10: Midterm Exam**

**WEEK 11:**

1. Write a program to implement Linear search
2. Write a program to implement Binary Search

**WEEK 12:**

1. Write a program to implement Selection sort
2. Write a program to implement Bubble sort
3. Write a program to implement Insertion sort

**WEEK 13:**

1. Write a program to implement Merge sort
2. Write a program to implement Quick sort

**WEEK 14:**

1. Implementation of a binary tree representation using Arrays
2. Write a program to implement tree traversals.

**WEEK 15:**

1. Implementation of a Graph representation using Adjacency Matrix
2. Write a program to implement graph traversals.

**WEEK 16: Final Internal Lab Exam**

**VNR Vignana Jyothi Institute of Engineering & Technology**

**I Year B.Tech-II Sem (Common to CSE, IT, ME, AME) L T/P/D C**  
**0 3 2**

**(ENG1202) ENGLISH LANGUAGE COMMUNICATION SKILLS LABORATORY-II**

In continuation with the first Year I semester syllabus, this course offers further practice in Listening, Speaking, and Grammar in preparation for the advanced speaking and writing skills offered in the III Year .

**Unit I**

**Multimedia Lab :**

1. Grammar – Active and Passive Voice
2. Vocabulary Lesson 6
3. Listening Comprehension

**Communication Skills Lab :**

- i) Data Analysis (Writing) ii) Interpretation of visuals

**Unit 2**

**Multimedia Lab :**

1. Grammar - Conditionals & Prepositions
2. Vocabulary Lesson 7
3. Listening Comprehension

**Communication Skills Lab :** Presentation Skills : Oral Presentation

**Unit 3**

**Multimedia Lab :**

1. Grammar -- Language Analysis
2. Vocabulary Lesson 8

**Communication Skills Lab :** Presentation Skills : PPTs

**Unit 4**

**Multimedia Lab :**

1. Grammar – Common Errors
2. Writing : Self Introduction (in the Written Form)
3. Vocabulary Lesson 9
4. Listening Comprehension

**Communication Skills Lab :** Debate

**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 10

**Communication Skills Lab :** Group Discussions

## VNR Vignana Jyothi Institute of Engineering & Technology

II Year B. Tech CSE, IT – I Sem

L	T/P/D	C
3	1	3

### (MTH1106) PROBABILITY AND STATISTICS

#### 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

**Sampling Distributions and Testing of Hypothesis:** Sampling distributions, sampling distribution of means ( $\sigma$  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 III

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

#### UNIT IV

**Correlation and Regression:** Coefficient of correlation, regression coefficient, the lines of regression, rank correlation, correlation for bivariate frequency distributions.

#### UNIT V

**Reliability theory and Time Series analysis:** Basic concepts of reliability, Normal failure law, Exponential failure law, The Weibull failure law and reliability of systems. Time series- utility of time series analysis, components of time series. Preliminary adjustments before analyzing time series. Measurement of trend by the method of least squares.

#### TEXT BOOKS

1. Probability and Statistics for Engineers – Richard . A.Johanson, 1995, 5th Edition, Prentice-Hall.
2. Reliability Engineering- Balagurusamy E., Tata McGraw Hill Publishers, New Delhi, 1984
3. Statistical Methods - S.P. Gupta, (2011), Sultan Chand and sons.

#### REFERENCES

1. Introductory Probability and Statistical Application - Meyer,(1970), 2nd edition, Oxford and Ibh

## VNR Vignana Jyothi Institute of Engineering & Technology

II Year B. Tech CSE, IT – I Sem

L	T/P/D	C
3	1	3

### (ECE1158) BASIC ELECTRONICS

#### UNIT I: Diodes, Rectifiers and Filters

Qualitative theory of p-n junction, p-n junction as a diode, diode equation, v-i characteristics, temperature dependence of VI characteristics, static and dynamic resistance levels, p-n diode as a rectifier, half wave and full wave rectifiers, C- filter, Breakdown mechanisms in p-n junction diodes, zener diode characteristics, zener diode as a regulator.

#### UNIT II: Bipolar Junction Transistor

Junction transistor, Transistor current components, Transistor Construction, BJT operation, BJT symbol, Detailed study of currents in a transistor Input and output characteristics of transistor in Common Base, Common Emitter and Common Collector Configurations, Relation between alpha and beta, transistor as an amplifier, Operating point, Need for biasing.

#### UNIT III: Field Effect Transistor

The JFET Construction and principal of operation, symbol, Pinch off voltage, Drain and Transfer characteristics, MOSFET principal of operation, symbol, MOSFET Characteristics in Enhancement and Depletion Mode.

#### UNIT IV: Introduction to Amplifiers

Definition of Voltage gain, Current gain, input resistance and output resistance in Amplifiers.

Concept of feedback, classification of feedback amplifiers, General characteristics of negative feedback amplifiers, Effect of feedback on amplifiers, Introduction to feedback topologies. Barkhausen criteria, principle of operation of LC and crystal oscillators

#### UNIT V: Special Purpose Electronic Devices

Principle of Operation and Characteristics of UJT, Principle of Operation of SCR, DIAC, TRIAC, Photo Diode, LED and LCD

#### TEXT BOOKS

1. Electronic Devices and Circuits – J.Millman, C.C.Halkias, and Satyabratha Jit, Tata McGraw Hill, 2nd Edition, 2007.
2. Electronic Devices and Circuits – R.L. Boylestad and Louis Nashelsky, Pearson/Prentice Hall, 11th Edition, 2006.
3. Electronic Devices and Circuits- S. S Salivahanan, N. Suresh Kumar, A. Vallava Raju, 2nd Edition., TMH, 2010

## REFERENCES

1. Integrated Electronics - J.Millman and Christos.C.Halkias, and Satyabratha, Jit  
Tata McGraw Hill, 2nd Edition, 2008.
2. Electronic Devices and Circuits – T.F. Bogart Jr., J.S.Beasley and G.Rico,  
Pearson Education,  
6th Edition, 2004.
3. Electronic Devices and Circuits – David A Bell, Oxford University Press, 5th  
edition (2008)

## VNR Vignana Jyothi Institute of Engineering & Technology

II Year B. Tech CSE, IT – I Sem

L	T/P/D	C
4	1	4

### (ITD1103) ADVANCED DATA STRUCTURES

#### 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 deallocation (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, 2<sup>nd</sup> 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.

## VNR Vignana Jyothi Institute of Engineering & Technology

II Year B. Tech CSE, IT – I Sem

L	T/P/D	C
3	0	3

### (CSE1122) MATHEMATICAL FOUNDATION FOR COMPUTER SCIENCE

#### UNIT I

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

#### UNIT II

**Relations:** Properties of binary Relations, equivalence, transitive closure, compatibility and partial ordering relations, 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. Elements of Discrete Mathematics- A Computer Oriented Approach, C.L.Liu, D.P. Mohapatra, 3rd edition, Tata Mc Graw Hill.
2. Discrete Mathematics for Computer Scientists and 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

## VNR Vignana Jyothi Institute of Engineering & Technology

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### (CMS1101) BUSINESS ECONOMICS AND FINANCIAL ANALYSIS

#### 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, Demand Analysis:** Definition, Nature and Scope of Managerial Economics- Demand Analysis Determinants, Law of Demand and its exceptions.

**Elasticity of Demand and Demand Forecasting:** Definitions, 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, judgmental approach to demand forecasting)

#### UNIT III

**Cost Analysis:** Cost concepts, Opportunity cost, Fixed vs. Variable costs, Explicit costs Vs. Implicit costs, Out of pocket costs vs. Imputed costs. Break-even Analysis (BEA)- Determination of Break-Even Point (simple problems)- Managerial Significance and limitations of BEA.

**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 of 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, Laws of Returns, Internal and External Economics 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 ratio and Quick ratio ), Activity Ratios ( inventory turnover ratio and Debtor turnover ratio ), Capital structure Ratios ( Debt – Equity ratio, Interest coverage ratio ), and profitability Ratios ( Gross profit ratio, net profit ratio, operating ratio, P/E ratio and EPs).

### **TEXT BOOKS**

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

### **REFERENCES**

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

## VNR Vignana Jyothi Institute of Engineering & Technology

II Year B.Tech CSE, IT – I Sem

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### (CSE1102) DIGITAL LOGIC DESIGN

#### 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 JohnWiley

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**(ITD1203) ADVANCED DATA STRUCTURES LABORATORY**

**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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**(ECE1252) BASIC ELECTRONICS LABORATORY**

**Part A:** (Only for viva-voce Examination)

**ELECTRONIC WORKSHOP PRACTICE**(in 3 lab sessions):

Identification, Specification, testing of R,L,C components (color codes), Potentiometers (SPDT, DPDT, and DIP), Coils, Gang Condensers, Relays, Bread Board, PCB's, Identification, Specification, testing of Active devices : Diodes, BJT, Low power JFET's, MOSFET's, Power Transistors, LED's, LCD's, SCR, UJT.

Study and operation of - Multimeters, Function Generator, Regulated Power Supplies, CRO

**Part B:** (For Laboratory Examination – Minimum of 10 experiments)

1. V-I characteristics of PN junction Diode.
2. Zener diode V-I characteristics
3. Zener diode as voltage regulator.
4. Half Wave rectifier with C-filter
5. Full wave Rectifier with C- filter.
6. Characteristics of CE- configuration.
7. Characteristics of CB configuration.
8. FET characteristics.
9. UJT characteristics
10. SCR characteristics
11. CE amplifier
12. LC oscillator

## VNR Vignana Jyothi Institute of Engineering & Technology

### II Year B. Tech CSE, IT - I Sem

#### (NCC1101) HUMAN VALUES AND PROFESSIONAL ETHICS

#### Course Description

##### Objectives

To develop the ability to distinguish between what is of value and what is superficial in life.

To develop the ability to face difficult situations in life boldly and resolve them confidently.

To enable students to progress from discrimination to commitment.

To Encourage the students to understand values in life.

##### Syllabus

1. Self-confidence
2. Peer Pressure-Irregular life style
3. The Power of Self- determination
4. Human relationship—trust and respect- resolving conflict
5. Anger-A sign of helplessness
6. Interaction and ragging
7. Right Utilization of physical facilities
8. Unhappiness -Unfulfilled expectations
9. Setting goals- long term and short term goals-handling responsibilities
10. Dealing with people while coordinating work
11. Coping with stress-Identifying one's interests and strengths
12. Time Management-Planning and aligning with one's goals
13. Skills and Values
14. The role of values in Society

##### Course Book

The resource material that has been prepared by IIIT can be used apart from material that is available in the websites. Later text books can be identified for the facility of the students.

##### Evaluation

This course would only have a pass/ fail grade. Participation in discussions, submission of assignments and weekly reports and a final report will be used in evaluation.

##### Outcome

At the end of the course the students would become sensitive towards human values. They would understand commitment and responsibility. They would be able to bring harmony in the society they live.

### **TEXT BOOKS**

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

### **REFERENCES**

1. Charles D. Fleddermann, "Engineering Ethics", Pearson Education / Prentice Hall, New Jersey, 2004 (Indian Reprint now available).
2. Charles E Harris, Michael S. Protchard and Michael J Rabins, "Engineering Ethics– Concepts and Cases", Wadsworth Thompson Learning, United States, 2000 (Indian Reprint now available)
3. John R Boatright, "Ethics and the Conduct of Business", Pearson Education, New Delhi, 2003.
4. Edmund G Seebauer and Robert L Barry, "Fundamentals of Ethics for Scientists and Engineers", Oxford University Press, Oxford, 2001.
5. Naagarazan, R.S. 'A Textbook on Professional Ethics and Human Values' 2006.

## VNR Vignana Jyothi Institute of Engineering & Technology

II Year B.Tech CSE, IT – II Sem

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### (CSE1103) FORMAL LANGUAGES & AUTOMATA THEORY

#### 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  $\epsilon$  transitions –Equivalence between NFA with and without  $\epsilon$  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, Undecidable 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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3	1	3

### (CSE1104) PRINCIPLES OF PROGRAMMING 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:** 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, Local referencing environments, parameter passing methods, overloaded sub-programs, generic sub-programs.

**Abstract Data types:** Introduction to data abstraction, encapsulation, and design issues, C++ parameterized ADT, object oriented programming in C++, Java. Concurrency---Subprogram level concurrency, semaphores, monitors, message passing, and Java threads.

#### UNIT V

**Exception handling:** Exceptions, Exception propagation, Exception handler in C++ and Java.

**Logic Programming Language:** Introduction and overview of logic programming, applications of logic programming.

**Functional Programming Language:** Introduction and fundamentals of FPL, LISP, ML, Haskell, applications of FPL and comparison of functional and imperative languages.

**TEXT BOOKS**

1. Concepts of Programming Languages by 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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### (ITD1104)COMPUTER ORGANIZATION

#### UNIT I

**BASIC 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, Register Transfer, Arithmetic Micro operations, Logic Micro operations, Shift Micro operations, Arithmetic logic shift unit.

#### UNIT II

**BASIC 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 III

**MICROPROGRAMMED 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 IV

**COMPUTER 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 V

**PIPELINE AND VECTOR PROCESSING:** Parallel Processing, Pipelining, Arithmetic Pipeline, Instruction 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, Safezaky, 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

### (CSE1105) DESIGN AND ANALYSIS OF ALGORITHMS

#### 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, applications-Principle of Optimality, 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 Selector, 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.Leiserson 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. Algorithms, Richard Johnson baugh and Marcus Schaefer, Pearson  
Education.
4. Data Structures and Algorithm Analysis in C++ ,Allen Weiss, Second  
edition,Pearson education.
5. Design and Analysis of Algorithms ,Aho ,Ullman and Hopcroft , Pearson  
Education.

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4	0	4

### (CSE1106) DATA BASE MANAGEMENT SYSTEMS

#### 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 – Comparison 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<sup>th</sup> 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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### (ITD1105) OBJECT ORIENTED PROGRAMMING THROUGH JAVA

#### UNIT I

##### Introduction to Java

Introduction: Creation of Java, Java buzzwords, OOP Principles, Encapsulation, Inheritance and Polymorphism, Classes and Objects: Creating and usage objects, introducing methods, constructors, usage of static with data and methods, usage of final with data, access control, this key word, garbage collection, overloading methods and constructors, parameter passing, recursion, nested classes and inner classes, String Handling

#### UNIT-II

##### Inheritance, Packages and Interfaces

Basic concepts, member access rules, usage of super key word, forms of inheritance, method overriding, abstract classes, dynamic method dispatch, using final with inheritance, the Object class. Defining, Creating and Accessing a Package, Understanding CLASSPATH, importing packages, differences between classes and interfaces, defining an interface, implementing interface, applying interfaces, variables in interface and extending interfaces.

#### UNIT-III

##### Exception Handling and Multithreading

Concepts of Exception handling, types of exceptions, usage of try, catch, throw, throws and finally keywords, Built-in exceptions, creating own exception sub classes, Concepts of Multithreading, differences between process and thread, thread life cycle, creating multiple threads using Thread class, Runnable interface, Synchronization, thread priorities, inter thread communication, daemon threads, deadlocks, thread groups.

#### UNIT-IV

##### Event Handling, AWT Controls

Events, Event sources, Event classes, Event Listeners, Delegation event model, handling mouse and keyboard events, Adapter classes.

AWT : Concepts of components, container, panel, window, frame, canvas, Font class, Color class and Graphics, AWT Controls. Applets - Concepts of Applets, differences between applets and applications, life cycle of an applet, types of applets, creating applets, passing parameters to applets.

## **UNIT-V**

### **Networking, Java Library, JDBC**

Networking: InetAddress, TCP/IP sockets, Datagrams, URL, URL connection, String handling, java.util, java.io and java.net packages.

JDBC: Different type of Drivers, Connection establishment, Retrieving and manipulation data from client and storing in data base. Java Library: explore io, util, net, lang, sql, awt packages. Introduction to Java APIs: what is API, discuss APIs in Java SE, Java EE, Java ME

### **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.

### **REFERENCES**

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.
4. Beginning in Java 2, Iver Horton, Wrox Publications.
5. Java, Somasundaram, Jaico.
6. Java Networking and AWT API Super Bible, Natraj Nagaratnam, Brian Masco, Arvind Srinivasan, White Group Press



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### (CSE1202) DATABASE MANAGEMENT SYSTEMS LABORATORY

**Objective:** This lab enables the students to practice the concepts learnt in the subject DBMS by developing a database for an example company named "Roadway Travels" whose description is as follows. The student is expected to practice the designing, developing and querying a database in the context of example database "Roadway travels". Students are expected to use "Oracle" database.

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

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

- Reservations and Ticketing
- Cancellations

**Reservations & Cancellation:**

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

Cancellations are also directly handed at the booking office.

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

The above process involves many steps like

1. Analyzing the problem and identifying the Entities and Relationships
2. E-R Model
3. Relational Model
4. Normalization
5. Creating the database
6. Querying.

Students are supposed to work on these steps week wise and finally create a complete "Database System" to Roadway Travels. Examples are given at every experiment for guidance to students.

#### **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). Indicate the type of relationships (total / partial). Try to incorporate generalization, aggregation, specialization etc wherever required.

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

### **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.

8. Write a Query to display the Information present in the Passenger and cancellation tables. Hint: Use UNION Operator.
9. Display the number of days in a week on which the 9WO1 bus is available.
10. Find number of tickets booked for each PNR\_no using GROUP BY CLAUSE. Hint: Use GROUP BY on PNR\_No.
11. Find the distinct PNR numbers that are present.
12. 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.
13. Find the total number of cancelled seats.
14. Display the details of passengers who travelled within the last 3 months.
15. 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 09: Querying

1. Find the names of all Juniors (Level = JR) who are enrolled in a class taught by I. Teach.
2. Find the age of the oldest student who is either a History major or is enrolled in a course taught by 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 ‘l’ 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, Pearson Education.
3. Oracle PL/SQL Programming, Steven Feuerstein, SPD.
4. SQL & PL/SQL for Oracle 10g, Black Book, Dr. P.S. Deshpande, Dream Tech.
5. Oracle Database 11g PL/SQL Programming, M. Me Laughlin. TMH.
6. SQL Fundamentals, J. Patrick, Pearson Education.

## VNR Vignana Jyothi Institute of Engineering & Technology

II Year B.Tech CSE, IT– II Sem

L	T/P/D	C
0	3	2

### (ITD1204) OBJECT ORIENTED PROGRAMMING *through JAVA LABORATORY*

#### Objectives:

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

Recommended Systems/Software Requirements:

- (1) Intel based desktop PC with minimum of 166 MHZ or faster processor with atleast 64 MB RAM and 100MB free disk space
- (2) JDK Kit. Recommended

#### Week1

a) Write a Java program that prints all real solutions to the quadratic equation  $ax^2 + bx + c = 0$ .

Read in a, b, c and use the quadratic formula. If the discriminant  $b^2 - 4ac$  is negative, display a message stating that there are no real solutions.

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

The first two values in the sequence are 1 and 1. Every subsequent value is the sum of the two values

preceding it. Write a Java program that uses both recursive and non recursive functions to print the nth value in the Fibonacci sequence.

#### Week 2

a) Write a Java program that prompts the user for an integer and then prints out all prime numbers up to that integer.

b) Write a Java program to multiply two given matrices.

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

#### Week 3

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

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

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

#### Week 4

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

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

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

text file.

#### **Week 5**

a) Write a Java program that:

i) Implements stack ADT. ii) Converts infix expression into Postfix form iii) Evaluates the postfix expression

#### **Week 6**

a) Develop an applet that displays a simple message.

b) Develop an applet that receives an integer in one text field, and computes its factorial value and returns it in another text field, when the button named "Compute" is clicked.

#### **Week 7**

a) Write a Java program that works as a simple calculator. Use a grid layout to arrange buttons for the digits and for the +, -, \*, % operations. Add a text field to display the result.

#### **Week 8**

a) Write a Java program for handling mouse events.

#### **Week 9**

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

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

#### **Week 10**

a) Write a program that creates a user interface to perform integer divisions. The user enters two numbers in the text fields, Num1 and Num2. The division of Num1 and Num2 is displayed in the Result field when the Divide button is clicked. If Num1 or Num2 were not an integer, the program would throw a NumberFormatException. If Num2 were Zero, the program would throw an ArithmeticException. Display the exception in a message dialog box.

#### **Week 11**

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

#### **Week 12**

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

b) Write a Java program that allows the user to draw lines, rectangles and ovals.

**Week 13**

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

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

**Week 14**

a) Write a java program to establish connection to a database and perform DML operations over the data base.

b) Design a form which will submit data to a database.

c) Create a Form to receive data from database

**Week 15**

a) Write a java program to make use of APIs

**TEXT BOOKS :**

1. Java How to Program, Sixth Edition, H.M.Dietel and P.J.Dietel, Pearson Education/PHI

2. Introduction to Java programming, Sixth edition, Y.Daniel Liang, Pearson Education

3. Big Java, 2nd

edition, Cay Horstmann, Wiley Student Edition, Wiley India Private Limited.

## VNR Vignana Jyothi Institute of Engineering & Technology

Ili Year B.Tech CSE, IT– I Sem

L	T/P/D	C
4	0	4

### (CSE1107) SOFTWARE ENGINEERING

#### 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 testing

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

## **REFERENCES**

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

## VNR Vignana Jyothi Institute of Engineering & Technology

III Year B. Tech CSE, IT- I Sem

L	T/P/D	C
4	0	4

### (ECE1109) MICROPROCESSORS AND MICROCONTROLLERS

#### UNIT I

Introduction to 8085 Microprocessor, Architecture of 8086 Microprocessor, Addressing modes of 8086, Instruction set of 8086, Assembler directives, simple assembly language programs, procedures, and macros. Pin diagram of 8086-Minimum mode and maximum mode of operation.

#### UNIT II

Memory and I/O organization of 8086, 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 III

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 IV

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.

**Timer, serial port and Interrupts programming:** Programming 8051 timers/counters, 8051 serial port programming, programming timer interrupts, programming External hardware interrupts, programming serial communication interrupts.

#### UNIT V

**Interfacing to 8051:** A/D and D/A Converter, Stepper Motor Interface, Key Board Interfacing, LCD Interfacing.

**ARM Processor:** Fundamentals, Registers, current program status register, pipeline, Exceptions, Interrupt and the vector table.

#### .TEXT BOOKS

1. Microprocessors and interfacing – Douglas V. Hall, TMH, 2<sup>nd</sup> Edition, 1999.
2. The 8051 microcontrollers and Embedded systems- Mazidi and mazidi, PHI, 2000.
3. ARM System Developer's Guide: Designing and Optimizing System Software- Andrew N. Sloss, Dominic Symes, Chris Wright, Elsevier Inc., 2007

## REFERENCES

1. Micro computer systems, The 8086/8088 Family Architecture, Programming and Design – Y.Liu and G.A. Gibson, PHI, 2<sup>nd</sup> 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, 2<sup>nd</sup> 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.

## VNR Vignana Jyothi Institute of Engineering & Technology

III Year B. Tech CSE, IT- I Sem

L	T/P/D	C
4	0	4

### (ITD1106) 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

**Physical layer:** Digital transmission, multiplexing, transmission media, 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. LAN - Ethernet IEEE 802.3 - IEEE 802.4 - IEEE 802.5 - IEEE 802.11

**Medium Access sub layer:** Random access, Controlled access, Channalization

#### UNIT III

**Network layer:** Logical addressing, internetworking, tunneling, address mapping, ICMP, IGMP, forwarding, Uni-cast routing protocols, multicast routing protocols.

#### 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, 3<sup>rd</sup> 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.

## VNR Vignana Jyothi Institute of Engineering & Technology

III Year B.Tech IT-I Sem

L	T/P/D	C
4	1	4

### (CSE1109) COMPILER DESIGN

#### 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 Dhamdhare ,2nd edition,tata McGraw-hill publishing comp pv ltd.

## **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, Loudon, Thomson.

## VNR Vignana Jyothi Institute of Engineering & Technology

III Year B.Tech CSE, IT-I Sem

L	T/P/D	C
3	1	3

### (ITD1107) OPERATING SYSTEMS

#### UNIT I

Computer System and Operating System Overview: Overview of computer operating systems operating systems functions protection and security distributed systems special purpose systems operating systems structures and systems calls operating systems generation.

Process Management – Process concepts threads, scheduling-criteria algorithms, their evaluation, Thread scheduling.

#### UNIT II:

Concurrency : Process synchronization, the critical- section problem, Peterson's Solution, synchronization Hardware, semaphores, classic problems of synchronization, monitors, Synchronization examples, atomic transactions.

Memory Management : Swapping, contiguous memory allocation, paging, structure of the page table , segmentation, virtual memory, demand paging, page-Replacement, algorithms.

#### UNIT III:

Principles of deadlock – system model, deadlock characterization, deadlock prevention, detection and avoidance, recovery form deadlock. File system Interface- the concept of a file, Access Methods, Directory structure, File system mounting, file sharing, protection.

#### UNIT IV :

File System implementation- File system structure, file system implementation, directory implementation, directory implementation, allocation methods, free-space management, efficiency and performance, case studies. UNIX, Linux, Windows. Mass-storage structure overview of Mass-storage structure, Disk structure, disk attachment disk scheduling, swap-space management, RAID structure, stable-storage implementation, Tertiary storage structure.

#### UNIT V :

Protection : Protection, Goals of Protection, Principles of Protection, Domain of protection Access Matrix, Implementation of Access Matrix, Access control, Revocation of Access Rights, Capability- Based systems, Language – Based Protection. Security- The Security problem, program threats, system and network threats cryptography as a security tool, user authentication, implementing security defenses, firewalling to protect systems and networks, computer –security classifications, case studies UNIX, Linux, Windows.



**TEXT BOOKS :**

1. Operating System Concepts- Abraham Silberchatz, Peter B. Galvin, Greg Gagne 7th Edition, John Wiley.
2. Operating systems- A Concept based Approach-D.M.Dhamdhere, 2nd Edition, TMH

**REFERENCES :**

1. Operating Systems' – Internal and Design Principles Stallings, Fifth Edition–2005, Pearson education/PHI
2. Operating System A Design Approach-Crowley, TMH.
3. Modern Operating Systems, Andrew S Tanenbaum 2nd edition Pearson/PHI.

## VNR Vignana Jyothi Institute of Engineering & Technology

III Year B.Tech CSE ,IT-I Sem

L	T/P/D	C
0	3	2

### (ITD1205) OPERATING SYSTEMS & COMPUTER NETWORKS LABORATORY

#### OBJECTIVE

- To understand the functionalities of various layers of OSI model.
- To understand the operating system functionalities System/Software Requirement.
- Intel based desktop PCs LAN CONNECTED with minimum of 166 MHZ or faster processor with at least 64 MB RAM and 100 MB free disk space.

#### COMPUTER NETWORKS LAB

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

#### OPERATING SYSTEMS LAB

7. Simulate the following CPU scheduling algorithms
8. a) Round Robin b) SJF c) FCFS d) Priority
9. Simulate all file allocation strategies
10. a) Sequential b) Indexed c) Linked
11. Simulate MVT and MFT
12. Simulate all File Organization Techniques
13. a) Single level directory b) Two level c) Hierarchical d) DAG
14. Simulate Bankers Algorithm for Dead Lock Avoidance
15. Simulate Bankers Algorithm for Dead Lock Prevention
16. Simulate all page replacement algorithms

**VNR Vignana Jyothi Institute of Engineering & Technology**

**III Year B.Tech CSE, IT-I Sem**

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**(ECE1206) MICROPROCESSORS AND MICROCONTROLLERS LABORATORY**

1. Programs for 16 bit arithmetic operations for 8086 (using Various Addressing Modes).
2. Program for sorting an array for 8086.
3. Program for searching for a number or character in a string for 8086.
4. Program for string manipulations for 8086.
5. Program for digital clock design using 8086.
6. Interfacing ADC and DAC to 8086 / 8051.
7. Interfacing stepper motor to 8086 / 8051.
8. Programming using arithmetic, logical and bit manipulation instructions of 8051.
9. Program and verify Timer/ Counter in 8051.
10. Program and verify Interrupt handling in 8051
11. UART Operation in 8051.
12. Communication between 8051 kit and PC.
13. Interfacing LCD to 8051.
14. Interfacing Matrix / Keyboard to 8051.

## VNR Vignana Jyothi Institute of Engineering & Technology

III Year B.Tech CSE, IT– I Sem

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### (ENG1204) 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.

#### The objectives of this course are to

- i) expose students to workplace writing
- ii) initiate them into the Process of Technical Communication
- iii) enable the students to create clear, accurate, and succinct content
- iv) enable students to produce documents reflecting different types of technical communication such as Abstracts, Proposals and Technical Reports through ample practice
- v) enable students to adjust technical content to meet the needs of a specific target audience
- vi) groom students in behavioral skills

#### Methodology

##### Written Communication 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.

##### Objectives of Writing Component

- i) enable students to write clearly and succinctly
- ii) equip students with the ability to write technical genres

##### Oral Communication Component

The objective of including Oral Communication is to impart behavioral skills and prepare students to speak to a large group or team, keeping in mind the audience, context and purpose of communication. This Oral Communication component must enable students to speak in an organized and mature way, without any inhibitions. They will be groomed to relate their speech to their audience.

##### Objectives of Oral Communication Component

- i) equip students with Behavioral skills
- ii) prepare them for Oral presentations, and Group Discussions
- iii) equip them with Interview skills

## **Syllabus Outline**

### **Unit I**

#### **writing Skills 1**

1. Applications and Covering letters
2. Resume Writing
3. Verbal Ability
4. Oral Communication :Talking About Yourself

### **Unit II**

1. Writing an SOP
2. Summarizing and Synthesizing Information
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**

Ashraf Rizvi, M (2005). *Effective Technical Communication*, Tata Mc Graw Hill Publishing Company Limited, New Delhi.

Anderson, Paul V. (2003). Reports. In Paul V. Anderson's *Technical Communication: A Reader-Centered Approach* ( 5th ed..) (pp. 457-473). Boston: Heinle.

William S. Pfeiffer, (2010) *Technical Communication: A Practical Approach* (7th ed.). Prentice Hall

#### **References**

1. Burnett, Rebecca. *Technical Communication*. 5th Ed., Heinle, 2001
2. Bolter, Jay David. ( 2001). The late age of print. In Robert P. Yagelski's (Ed.) *Literacies and Technologies: A Reader for Contemporary Writers* (135-145). New York: Longman.
3. Brandt, Deborah. (1998). Sponsors of literacy. *College Composition and Communication* 49.2, 165-185.

4. Gerson Sharon J. and Steven Gerson : Technical Writing Process and Product. 3rd edition, New Jersey: Prentice Hall 1999
5. Johnson-Sheehan, Richard. (2007). Starting Your Career. In Richard Johnson-Sheehan's Technical Communication Today (2nd ed.) (pp. 388-402). New York: Longman.
6. Markel, Mike. Technical Communication: Situations and Strategies (8th EDITION (2006-2007)
7. R. C. Sharma and K. Mohan, Business Correspondence and Report Writing, Third Edition, TMH, 2002. (Indian Edition)
8. M. Raman and S. Sharma, Technical Communication : Principles and Practices, OUP, 2004. (Indian Edition)

**(ITD1108) SOFTWARE TESTING METHODOLOGIES**

**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 Gopalswamy Ramesh, Pearson education, 2006.
2. "Software Testing Techniques", Boris Beizer, 2<sup>nd</sup> 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



## VNR Vignana Jyothi Institute of Engineering & Technology

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### (CSE1111) DATA WAREHOUSING AND DATA MINING

#### 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 Backpropagation, 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.
2. Data 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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### (ITD1109) LINUX PROGRAMMING

#### UNIT I

**Linux Utilities**-File handling utilities, Security by file permissions, Process utilities, Disk utilities, Networking commands, Filters, Text processing utilities and Backup utilities, sed – scripts, operation, addresses, commands, applications, awk – execution, fields and records, scripts, operation, patterns, actions, functions, using system commands in awk.

#### UNIT II

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

#### UNIT III

**Linux Files:** File Concept, File System Structure, Inodes, File types, The standard I/O (fopen, fclose, fflush, fseek, fgetc, getc, getchar, fputc, putc, putchar, fgets, gets etc.), formatted I/O, stream errors, kernel support for files, System calls, library functions, file descriptors, low level file access - usage of open, creat, read, write, close, lseek, stat family, umask, dup, dup2, fcntl, file and record locking. file and directory management - chmod, chown, links(soft links & hard links - unlink, link, symlink), mkdir, rmdir, chdir, getcwd, Scanning Directories-opendir, readdir, closedir,rewinddir, seekdir, telldir functions.

#### UNIT IV

**Linux Process** – Process concept, Kernel support for process, process attributes, process hierarchy, process states, process composition, process control - process creation, waiting for a process, process termination, zombie process, orphan process, system call interface for process management-fork, vfork, exit, wait, waitpid, exec family, system.

Linux Signals – Introduction to signals, Signal generation and handling, Kernel support for signals, Signal function, unreliable signals, reliable signals, kill, raise, alarm, pause, abort, sleep functions.

## **UNIT V**

**Interprocess Communication** : Introduction to IPC, FIFOs, client/server example. Semaphores- Kernel support for semaphores, Linux APIs for semaphores, file locking with semaphores.

Shared Memory- Kernel support for shared memory, Linux APIs for shared memory, semaphore and shared memory example.

Sockets: Introduction to Linux Sockets, 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, rp-2007.
2. Unix Network Programming, W.R.Stevens,PHI.
3. Unix for programmers and users, 3rd Edition, Graham Glass, King Ables, Pearson Education, 2003.
4. Advanced Programming in the Unix environment, 2nd Edition, W.R.Stevens, Pearson Education.
5. System Programming with C and Unix,A.Hoover,Pearson.
6. Unix Programming, Kumar Saurabh, 1st Edition, Wiley India pvt Ltd.
7. Unix and Shell programming, B.A.Forouzan and R.F.Gilberg, Cengage Learning.

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### (ECE1156) DATA COMMUNICATIONS SYSTEMS

#### UNIT I

**INTRODUCTION TO DATA COMMUNICATIONS AND NETWORKING:** Standards Organizations for Data Communications, Layered Network Architecture, Open Systems Interconnection, Data Communications Circuits, Serial and parallel Data Transmission, Data communications Circuit Arrangements, Data communications Networks, Alternate Protocol Suites.

**SIGNALS, NOISE, MODULATION, AND DEMODULATION:** Signal Analysis, Electrical Noise and Signal-to-Noise Ratio, Analog Modulation Systems, Information Capacity, Bits, Bit Rate, Baud, and M-ary Encoding, Digital Modulation.

#### UNIT II

**METALLIC CABLE TRANSMISSION MEDIA:** Metallic Transmission Lines, Transverse Electromagnetic Waves, Characteristics of Electromagnetic Waves, Transmission Line Classifications, Metallic Transmission Line Types, Metallic Transmission Line Equivalent Circuit, Wave Propagation on Metallic Transmission Lines, Metallic Transmission Line Losses.

**OPTICAL FIBER TRANSMISSION MEDIA:** Advantages of Optical Fiber Cables, Disadvantages of Optical Fiber Cables, Electromagnetic spectrum, Optical Fiber Communications System Block Diagram, Optical Fiber construction, Losses in Optical Fiber Cables, Light sources, Light Detectors, Lasers.

#### UNIT III

**DIGITAL TRANSMISSION:** Pulse Modulation, Pulse code Modulation, Dynamic Range, Signal Voltage –to-Quantization Noise Voltage Ration, Linear Versus Nonlinear PCM Codes, Companding, PCM Line Speed, Delta Modulation PCM and Differential PCM.

**MULTIPLEXING AND T CARRIERS:** Time- Division Multiplexing, T1 Digital Carrier System, North American Digital Multiplexing Hierarchy, Digital Line Encoding, T Carrier systems, European Time- Division Multiplexing, Statistical Time – Division Multiplexing, Frame Synchronization, Frequency- Division Multiplexing, Wavelength- Division Multiplexing, Synchronous Optical Network

## **UNIT IV**

### **TELEPHONE INSTRUMENTS AND SIGNALS:**

The Subscriber Loop, Standard Telephone Set, Basic Telephone Call Procedures, Call Progress Tones and Signals, Cordless Telephones, Caller ID, Paging Systems.

### **THE TELEPHONE CIRCUIT:**

The Local Subscriber Loop, Transmission Parameters and Private line circuits, Voice-Frequency Circuit

Arrangements, Noise and Crosstalk.

**CELLULAR TELEPHONE SYSTEMS:** Introduction to Cellular Telephone systems, Different Generations of Cellular Telephone Systems, Global system for Mobile Communications, Personal Communications Satellite System.

## **UNIT V**

### **DATA COMMUNICATIONS CODES, ERROR CONTROL AND DATA FORMATS:**

Data Communications Character Codes, Bar Codes, Error Control, Error Detection, Error Correction, Character Synchronization.

**DATA COMMUNICATIONS EQUIPMENT:** Digital Service Unit and Channel Service Unit, Voice- Band Data Communication Modems, Bell Systems- Compatible Voice-Band Modems, Voice- Band Modem Block Diagram, Voice- Band Modem Classifications, Asynchronous Voice-Band Modems, Synchronous Voice-Band Modems, Modem Synchronization, ITU-T Voice- Band Modem Specifications, 56K Modems, Modem Control: The AT Command Set, Cable Modems, Probability of Error and Bit Error Rate

### **TEXT BOOKS**

1. Introduction to Data Communications and Networking, Wayne Tomasi, Pearson Education.

### **REFERENCES**

1. Data Communications and Networking, Behrouz A Forouzan, Fourth Edition. TMH.
2. Computer Communications and Networking Technologies, Gallow, Second Edition Thomson
3. Computer Networking and Internet, Fred Halsll, Lingana Gouda Kulkarni, Fifth Edition, Pearson Education

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### (CSE1110) OBJECT ORIENTED ANALYSIS AND DESIGN

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

#### REFERENCES

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

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**(ITD1126)GREEN IT**

**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 Poniowski- 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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### (CED1147) DISASTER MANAGEMENT

#### **UNIT-I: 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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### (MED1160)INTRODUCTION TO OPERATIONS RESEARCH

#### UNIT I:

**Introduction to Operations Research:** Basics definition, scope, objectives, phases, models and limitations of Operations Research, Linear Programming Problem – Formulation of LPP, Graphical solution of LPP, Simplex Method, Artificial variables, Big-M method, Two-phase method, Degeneracy and unbound solution.

#### UNIT II:

**Transportation Problem:** Formulation, solution, unbalanced Transportation problem, Finding basic feasible solutions – Northwest corner rule, least cost method and Vogel's approximation method, Optimality test: the stepping stone method and MODI method.

#### UNIT III:

**Assignment model:** Formulation, Hungarian method for optimal solution, Solving unbalanced problem, Traveling salesman problem and assignment problem.

**Sequencing models:** Solution of Sequencing Problem – Processing n Jobs through 2 Machines – Processing n Jobs through 3 Machines – Processing 2 Jobs through m machines–Processing n Jobs through m machines.

#### UNIT IV:

**Dynamic programming:** Characteristics of dynamic programming, Dynamic programming approach for Priority Management employment smoothening, Capital budgeting, Stage Coach / Shortest Path, Cargo loading and Reliability problems.

**Games Theory:** Competitive games, Rectangular game, Saddle point, Minimax (maximin) method of optimal strategies, Value of the game, Solution of games with saddle points, Dominance principle, Rectangular games without saddle point – mixed strategy for 2 X 2 games.

#### UNIT V:

**Replacement Models:** Replacement of Items that Deteriorate whose maintenance costs increase with time without change in the money value, Replacement of items that fail suddenly: individual replacement policy, Group Replacement policy.

**Inventory models:** Inventory costs, Models with deterministic demand – model (a) demand rate uniform and production rate infinite, model (b) demand rate non-uniform and production rate infinite, model (c) demand rate uniform and production rate finite.

**TEXT BOOKS:**

1. P. Sankara Iyer, "Operations Research", TataMcGraw-Hill, 2008.
2. A. M. Natarajan, P. Balasubramani, A. Tamilarasi, "Operations Research", Pearson Education, 2005.

**REFERENCES:**

1. J. K. Sharma, "Operations Research Theory & Applications", 3e, Macmillan india Ltd, 2007.
2. P. K. Gupta and D. S. Hira, "Operations Research", S. Chan & Co, 2007.
3. J. K. Sharma, "Operations Research, Problems and Solutions", 3e, Macmillan India Ltd.
4. N. V. S. Raju, "Operations Research", HI-TECH, 2002.

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**(CSE1121) CYBER SECURITY**

**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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**(ITD1206) OBJECT ORIENTED ANALYSIS & DESIGN**

**AND**

**SOFTWARE TESTING LABORATORY**

**Object Oriented Analysis and Design Lab**

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.

For our case study we have chosen an airport—the UML Airport. Anyone who has ever been on a flight will have no problems understanding our example.

We will restrict our example to those areas of the airport that passengers are in contact with during departure, meaning we will take a closer look at passenger check-in and boarding. Figure 2.1 illustrates how passenger services can be distinguished from other areas of the airport. It shows the various stages that passengers go through until they are seated in the airplane, buckled up, and the plane is ready to take off. Not all stages passengers go through are related to passenger services. The stages that belong to passenger services are framed and printed in italic font.

A sequence of steps like this is called a scenario. However, the depicted scenario is only one of many possible scenarios. The following exceptions are possible for passenger check-in and boarding:

The passenger only has carry-on luggage.

The passenger doesn't buy anything at the newsstand.

The passenger is running late and now has to check in as quickly as possible.

The passenger loses his or her boarding pass.

The passenger arrived by plane and merely has to change planes, meaning that he or she doesn't leave the transit area.

The passenger checks in, but falls asleep on an uncomfortable chair in the waiting area, and misses the departure of his or her flight, despite being called repeatedly.

The passenger doesn't get through passport inspection because his or her passport has expired.

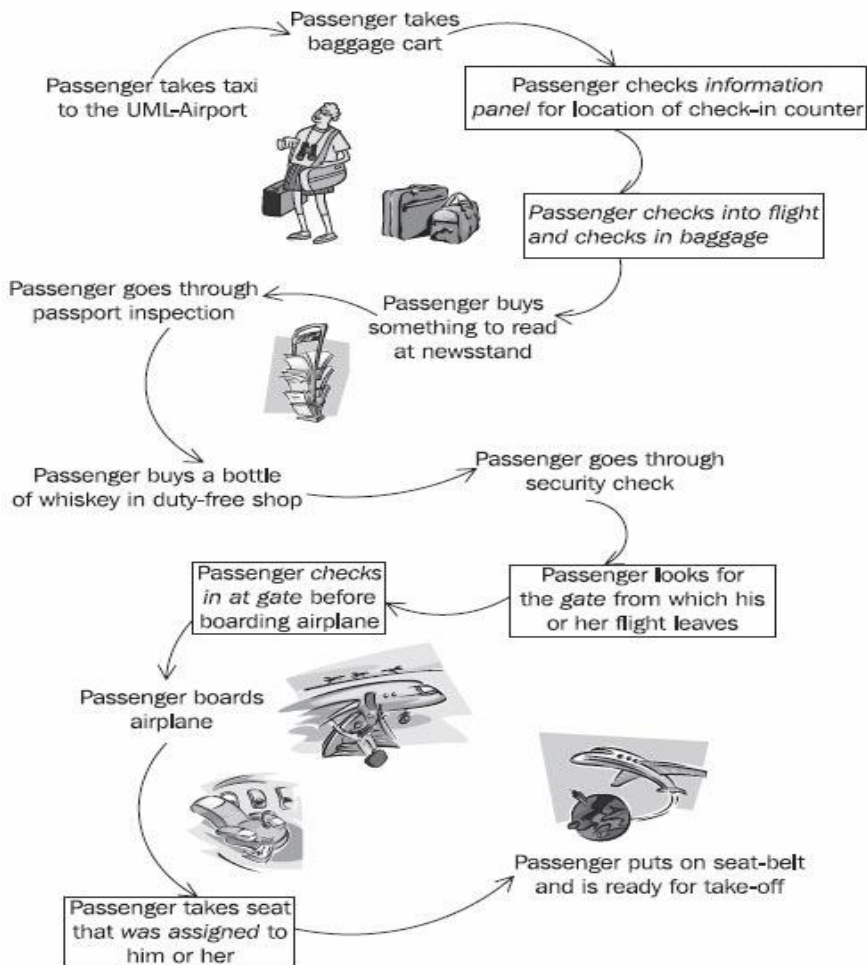


Figure 2.1 Case Study: "Passenger takes plane to go on vacation"

Think about which of the above-mentioned scenarios are relevant for passenger departure and whether there are more relevant scenarios than those mentioned.



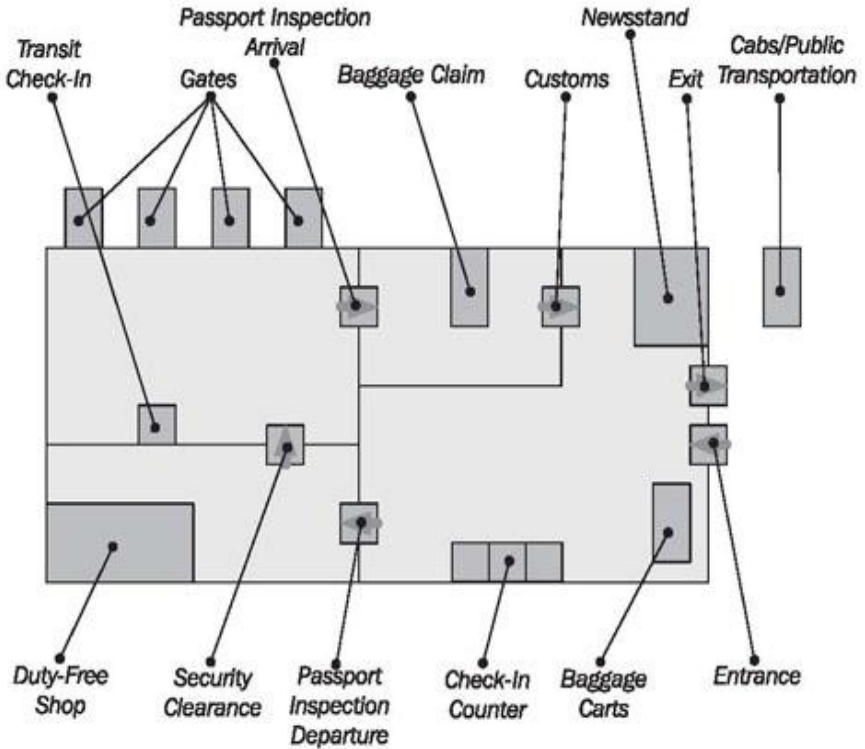


Figure 2.2 Schematic illustration of the UML Airport

The schematic illustration of the UML Airport in Figure 2.2 should help you to understand the events of the case study better. Many areas around the main passenger services are related in one or more ways to passenger services. Some examples are: Ticket sales, Newsstand, Duty-free shop

Passport inspection/immigration, Flight control, Information desk, Baggage check-in and transportation, Passenger services have to exchange data with some of these areas. They also have to communicate with other areas of the airport. We will introduce those areas when we discuss business models and models of system integration. Therefore, the case study will be expanded, UML Airport is a small airport and the case study has been purposely kept simple. Anyone who has ever been on a flight should be able to understand the examples. The purpose of the case study is to provide a coherent example throughout the chapters of this book. A few details of the case study require further explanation: The plane ticket consists of the actual ticket and up to four additional sections. The ticket is the little booklet that has a separate coupon for every part of the trip. For example, a ticket could contain a coupon for the flight from

Zurich to Frankfurt, one for the flight from Frankfurt to London, and one for the return flight from London to Zurich. Each time at check-in the appropriate coupon will be exchanged for a boarding pass. The ticket always stays with the passenger.

We distinguish between a flight and a flight number. For instance, a flight number could be LH435 or LX016. It stands for a regular flight that occurs at a certain time from the departure airport to the destination airport. A flight, on the other hand, would be, for example, LH435 on 26th August, 2000. It is, so to speak, an execution of a flight number. A flight could be canceled due to bad weather. A flight number is used as long as the airline offers a certain flight regularly.

We differentiate between three options for check-in:

Normal check-in with luggage at a normal check-in counter

Expres scheck-in without luggage at a special check-in counter

Automated check-in without luggage at a machine

Draw UML diagrams

1. Class Diagram
2. Use case diagram
3. State chart diagram
4. Activity diagram
5. Component diagram
6. Deployment diagram

## **Software Testing Lab**

List of Experiments

1. Write programs in „C“ Language to demonstrate the working of the following constructs:
  - i) do...while ii) while....do iii) if...else iv) switch v) for
2. “A program written in „C“ language for Matrix Multiplication fails” Introspect the causes for its failure and write down the possible reasons for its failure.
3. Take any system (e.g. ATM system) and study its system specifications and report the various bugs.
4. Create a test plan document for any application (e.g. Library Management System)
5. Study of Win Runner/QTP for functional testing.
6. Study of Load Runner for Load/Stress testing
7. Testing the performance of a webpage
8. Testing the performance of a Database Server
9. Study of any test management tool (e.g. Test Director)
10. Study of any open source-testing tool (e.g. Test Link)

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### (ITD1207) LINUX PROGRAMMING AND DATA MINING LABORATORY

#### LINUX PROGRAMMING

Note: Use Bash for Shell scripts.

1. 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.
2. Write a shell script that deletes all lines containing a specified word in one or more files supplied as arguments to it.
3. 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.
4. 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.
5. Write a shell script that accepts a list of file names as its arguments, counts and reports the occurrence of each word that is present in the first argument file on other argument files.
6. Write a shell script to list all of the directory files in a directory.
7. Write a shell script to find factorial of a given integer.
8. Write an awk script to count the number of lines in a file that do not contain vowels.
9. Write an awk script to find the number of characters, words and lines in a file.
10. Write a c program that makes a copy of a file using standard I/O and system calls.
11. Implement in C the following Unix commands using System calls  
a. cat b. mv
12. Write a program that takes one or more file/directory names as command line input and reports the following information on the file.  
A. File type. B. Number of links.  
C. Time of last access. D. Read, Write and Execute permissions.
13. Write a C program to emulate the Unix ls -l command.
14. Write a C program to list for every file in a directory, its inode number and file name.
15. Write a C program that demonstrates redirection of standard output to a file.Ex: ls > f1.

16. Write a C program to create a child process and allow the parent to display "parent" and the child to display "child" on the screen.
17. Write a C program to create a Zombie process.
18. Write a C program that illustrates how an orphan is created.
19. Write a C program that illustrates how to execute two commands concurrently with a command pipe. Ex:- ls -l | sort
20. Write a C program (sender.c) to create a message queue with read and write permissions to write 3 messages to it with different priority numbers.
21. Write a C program (receiver.c) that receives the messages (from the above message queue as specified in (20)) and displays them.

**TEXT BOOKS:**

1. Advanced Unix Programming, N.B.Venkateswarulu, BS Publications.
2. Unix and Shell programming, B.A.Forouzan and R.F.Gilberg, Cengage Learning.
3. Unix and Shell Programming, M.G. Venkatesh Murthy, Pearson Education, 2005.
4. Unix Shells by Example, 4th Edition, Ellie Quigley, Pearson Education.
5. Sed and Awk, O.Dougherty&A.Robbins,2nd edition,SPD.

**DATA MINING**

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

1. Gain insight for running pre- defined decision trees and explore results using MS OLAP Analytics.
2. Using IBM OLAP Miner - Understand the use of data mining for evaluating the content of multidimensional cubes.
3. Using Teradata Warehouse Miner - Create mining models that are executed in SQL. (BI Portal Lab: The objective of the lab exercises is to integrate pre-built reports into a portal application)
4. Publish cognos cubes to a business intelligence portal. Metadata & ETL Lab: The objective of the lab exercises is to implement metadata import agents to pull metadata from leading business intelligence tools and populate a metadata repository. To understand ETL processes.
5. Import metadata from specific business intelligence tools and populate a Meta data repository. Publish metadata stored in the repository.
6. Load data from heterogeneous sources including text files into a pre-defined warehouse schema. Case study
7. Design a data mart from scratch to store the credit history of customers of a bank. Use this credit profiling to process future loan applications.

8. Design and build a Data Warehouse using bottom up approach titled 'Citizen Information System'. This should be able to serve the analytical needs of the various Governments Departments and also provide a global integrated view.

Credit Risk Assessment Description:

The business of banks is making loans. Assessing the credit worthiness of an applicant is of crucial importance. You have to develop a system to help a loan officer decide whether the credit of a customer is good, or bad. A bank's business rules regarding loans must consider two opposing factors. On the one hand, a bank wants to make as many loans as possible. Interest on these loans is the banks profit source. On the other hand, a bank cannot afford to make too many bad loans. Too many bad loans could lead to the collapse of the bank. The bank's loan policy must involve a compromise: not too strict, and not too lenient. To do the assignment, you first and foremost need some knowledge about the world of credit. You can acquire such knowledge in a number of ways. Knowledge Engineering. Find a loan officer who is willing to talk. Interview her and try to represent her knowledge in the form of production rules.

Books. Find some training manuals for loan officers or perhaps a suitable textbook on finance. Translate this knowledge from text form to production rule form.

Common sense. Imagine yourself as a loan officer and make up reasonable rules which can be used to judge the credit worthiness of loan applicant.

Case histories. Find records of actual cases where competent loan officers correctly judged when, and when not to, approve a loan application.

The German Credit Data:

Actual historical credit data is not always easy to come by because of confidentiality rules. Here is one such dataset, consisting of 1000 actual cases collected in Germany. credit dataset (original) Excel spreadsheet version of the German credit data. (Down load from web) In spite of the fact that the data is German, you should probably make use of it for this assignment. (Unless you really can consult a real loan officer !)

A few notes on the German dataset

- DM stands for Deutsche Mark, the unit of currency, worth about 90 cents Canadian (but looks and acts like a quarter).
  - owns\_telephone. German phone rates are much higher than in Canada so fewer people own telephones.
  - foreign\_worker. There are millions of these in Germany (many from Turrkey). It is very hard to get German citizenship if you were not born of German parents.
  - There are 20 attributes used in judging a loan applicant. The goal is the classify the applicant into one of two categories, good or bad.
1. List all the categorical (or nominal) attributes and the real-valued attributes seperately.

2. What attributes do you think might be crucial in making the credit assessment ? Come up with some simple rules in plain English using your selected attributes.
3. One type of model that you can create is a Decision Tree - train a Decision Tree using the complete dataset as the training data. Report the model obtained after training.
4. Suppose you use your above model trained on the complete dataset, and classify credit good/bad For each of the examples in the dataset. What % of examples can you classify correctly? (This is also called testing on the training set) Why do you think you cannot get 100 % training accuracy?
5. Is testing on the training set as you did above a good idea ? Why orWhy not ?
6. One approach for solving the problem encountered in the previous question is using cross- validation ? Describe what is cross-validation briefly. Train a Decision Tree again using cross- validation and report your results. Does your accuracy increase/decrease ? Why ? (10 marks)
7. Check to see if the data shows a bias against "foreign workers" (attribute 20),or "personal-status" (attribute 9). One way to do this (perhaps rather simple minded) is to remove these attributes from the dataset and see if the decision tree created in those cases is significantly different from the full dataset case which you have already done. To remove an attribute you can use the preprocess tab in Weka's GUI Explorer. Did removing these attributes have any significant effect? Discuss.
- 8 .Another question might be, do you really need to input so many attributes to get good results? Maybe only a few would do. For example, you could try just having attributes 2, 3, 5, 7, 10, 17 (and 21, the class attribute (naturally)). Try out some combinations. (You had removed two attributes in problem 7. Remember to reload the arff data file to get all the attributes initially before you start selecting the ones you want.)
9. Sometimes, the cost of rejecting an applicant who actually has a good credit (case 1) might be higher than accepting an applicant who has bad credit (case 2). Instead of counting the misclassifications equally in both cases, give a higher cost to the first case (say cost 5) and lower cost to the second case. You can do this by using a cost matrix in Weka. Train your Decision Tree again and report the Decision Tree and cross-validation results. Are they significantly different from results obtained in problem 6 (using equal cost)?
- 10 . Do you think it is a good idea to prefer simple decision trees instead of having long complex decision trees ? How does the complexity of a Decision Tree relate to the bias of the model ?
- 11 . You can make your Decision Trees simpler by pruning the nodes. One approach is to use Reduced Error Pruning - Explain this idea briefly. Try reduced error pruning for training your Decision Trees Using cross-validation (you can do this

in Weka) and report the Decision Tree you obtain ? Also, report your accuracy using the pruned model. Does your accuracy increase ?

- 12 . Extra Credit): How can you convert a Decision Trees into "if-then-else rules". Make up your own small Decision Tree consisting of 2-3 levels and convert it into a set of rules. There also exist different classifiers that output the model in the form of rules - one such classifier in Weka is rules.PART, train this model and report the set of rules obtained. Sometimes just one attribute can be good enough in making the decision, yes, just one ! Can you predict what attribute that might be in this dataset ? OneR classifier uses a single attribute to make decisions (it chooses the attribute based on minimum error). Report the rule obtained by training a one R classifier. Rank the performance of j48, PART and oneR Task Resources: Andrew Moore's Data Mining Tutorials (See tutorials on Decision Trees and Cross Validation) Decision Trees (Source: Tan, MSU) Tom Mitchell's book slides (See slides on Concept Learning and Decision Trees)

Weka resources:

[Introduction to Weka \(html version\)](#) ([download ppt version](#))

[Download Weka](#)

[Weka Tutorial](#)

[ARFF format](#)

[Using Weka from command line](#)

## VNRVignana Jyothi Institute of Engineering & Technology

III Year B.Tech CSE, IT-II Sem

L	T/P/D	C
2	0	0

### (NCC1102) Soft Skills and Personality Development

#### Introduction

In an era of Technological advances and competition in the job market, it is necessary for students to possess soft skills and effective personal skills in addition to technical skills. It is essential that students possess the ability to convey technical ideas in a sound and simple manner. Planning and execution are the two important activities required for them. It is the execution that requires the soft skills as it most of the times deals with people. This course on “Soft Skills and Personality Development” is aimed at enhancing students’ career prospects.

This course uncovers the principles of soft skills and personality skills, the ways to integrate them in different phases of career that require personal and interpersonal skills. It focuses on transforming the way of one’s thinking and reacting to the environment. It equips the students with self analysis and gain self- control through stress management and conflict management. It also helps students with study skills. It helps students overcome their barriers and achieve excellence in performance and succeed in their chosen field of work.

#### Objectives

- enable students to convert the conceptual understanding of communication into everyday practice

- train students to ground concepts/ideas in their own experience

- enable students to exercise control over language use

- sensitise students to the nuances of the four basic communication skills –

- enable students to understand the concept and components of personality, so as to apply the acquired knowledge and march towards excellence in their academic careers.

- train students to become aware of their thinking styles and to enable them to convert thinking into performance

- prepare students to evolve mental models for intra-personal and inter-personal transactions

- make students reflect and improve their use of body language – posture, gesture, facial expression, tone

- sharpen memory skills and other study skills, which are vital for academic excellence.

- bring out the creativity and latent talents of students through goal setting

- train students for positive thinking to keep them in good stead at the time of crisis.



## **SYLLABUS**

### **Unit I: Introduction to Personality Development**

1. Definition and Basics of personality
  - Determinants of Personality- biological, psychological and socio-cultural factors
  - Need for personality Development
2. Analyzing strengths and Weaknesses
3. Corporate theories on Personality development
4. Increasing vocabulary
5. Body Language
6. Preparation of Self Introduction
7. Motivation
  - Self-analysis through SWOT
  - Techniques and strategies for self-motivation

### **Unit II : Techniques in Personality Development Stage I**

1. Communication Skills
2. Listening
3. Communication Barriers
4. Overcoming these Barriers
5. Importance of Self Esteem -- Building Self-esteem& Self Confidence
6. Working on attitudes – aggressive, assertive and submissive
7. Goal Setting
8. Leadership and Team Building Skills
9. Group Discussion

### **Unit III: Techniques in Personality Development Stage II**

1. Interpersonal relationships
  - Analysis of ego states, Transactions, Strokes and Life Positions
2. Stress Management
  - Concept, Nature and Dimensions of Stress
  - Causes, Impact and Managing Stress
  - Relaxation Techniques
3. The Power of positive thinking
  - Nurturing creativity, decision-making and problem solving
  - Goals and techniques for positive thinking
  - Enhancement of concentration through positive thinking
4. Projecting a Positive Social Image
  - Grooming & Social Etiquette
  - Voice Modulation
  - Public Speaking

#### **Unit IV: Techniques in Personality Development Stage III**

- Conflict Management
- Introduction to Conflict Management
- Levels of Conflict
- Managing Conflict
- Time Management
- Concept
- Importance and Need
- Steps towards better Time Management

#### **Unit V: Memory and Study Skills**

- Definition and importance of memory
- Causes of forgetting
- How to forget (thought stopping), how to remember (techniques for improving memory)
- The technique of passing exams-Management of examination fear.

#### **PRACTICAL TRAINING**

The course would include the following practical exercises.

- Ice- breaking. Brainstorming and simulation exercises. Thought stopping. Memory and study skills training
- Role play and record work

#### **REFERENCES**

1. Mile, D.J (2004). Power of positive thinking. Delhi: Rohan Book Company.
2. Pravesh Kumar (2005). All about self- Motivation. New Delhi: Goodwill Publishing House.
3. Dudley, G.A. (2004). Double your learning power. Delhi: Konark Press. Thomas Publishing Group Ltd.
4. Lorayne, H. (2004). How to develop a super power memory. Delhi: Konark Press. Thomas Publishing Group Ltd.
5. Hurlock, E.B (2006). Personality Development, 28<sup>th</sup> Reprint. New Delhi: Tata Mc Graw Hill.
6. Windshuttle, Keith and Elizabeth Elliot.1999. Writing, Researching and Communicating: Communication Skills for the Information Age. 3<sup>rd</sup> Reprint. Tata McGraw-Hill. Australia
7. Dignen, Flinders and Sweeney. English 365. Cambridge University Press
8. Goleman, Daniel. 1998. Working with Emotional Intelligence. Bantam Books. New York
9. Jones, Leo and Richard Alexander. 2003. New International Business English. Cambridge University Press
10. Lucas, Stephen.2001. Art of Public Speaking. Mc-Graw Hill.

11. Tambllyn, Doni and Sharyn Weiss. 2000. The Big Book OF Humorous Training Games. 2004 Edition. Tata McGraw-Hill. New Delhi
12. Personality Development by Rajiv K. Mishra. Rupa & Co.
13. Powell. In Company. Macmillan
14. Cotton, et al. Market Leader. Longman
15. Pease, Allan. 1998. Body Language: How to Read Others Thoughts by their Gestures. Sudha Publications. New Delhi
16. Gardner, Howard. 1993. Multiple Intelligences: The Theory in Practice: A Reader. Basic Books. New York
17. De Bono, Edward. 2000. Six Thinking Hats. 2<sup>nd</sup> Edition. Penguin Books.
18. De Bono, Edward. 1993. Serious Creativity. Reprint. Harper Business.
19. Mohan, Krishna and Meera Bannerji, 2001, Developing Communication Skills. Macmillan.
20. V. Syamala, 2002. Effective English Communication for you. Emerald Publishers, Chennai.

## VNR Vignana Jyothi Institute of Engineering & Technology

IV Year B.Tech CSE, IT-I Sem

L	T/P/D	C
3	1	3

### (ITD1110) WEB TECHNOLOGIES

#### 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, JDK 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 Servlets: Lifecycle of a Servlet, JSDK, The Servlet API, The javax.servelet Package, Reading Servlet 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 Servlet.

**Introduction to JSP:** The Problem with Servlet. 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 AND JAVASERVER 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, 7<sup>th</sup> Edition by Herbert Schildt. TMH.

## VNR VIGNANA JYOTHI INSTITUTE OF ENGINEERING & TECHNOLOGY

IV Year B.Tech CSE,IT – I Sem

L	T/P/D	C
4	0	4

### (CMS1102) MANAGEMENT SCIENCE

#### 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

#### **REFERENCES**

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.

## VNR Vignana Jyothi Institute of Engineering & Technology

IV Year B.Tech CSE, IT– I Sem

L	T/P/D	C
3	1	3

### (ITD1119) DISTRIBUTED SYSTEMS

#### UNIT I

**Characterization of Distributed Systems:** Introduction, Examples of distributed Systems, Resource sharing and the Web Challenges. Architectural models, Fundamental Models.

**Theoretical Foundation for Distributed System:** Limitation of Distributed system, absence of global clock, shared memory, Logical clocks, Lamport's & vectors logical clocks.

**Concepts in Message Passing Systems:** causal order, total order, total causal order, Techniques for Message Ordering, Causal ordering of messages, global state, termination detection.

#### UNIT II

**Distributed Mutual Exclusion:** Classification of distributed mutual exclusion, requirement of mutual exclusion theorem, Token based and non token based algorithms, performance metric for distributed mutual exclusion algorithms.

**Distributed Deadlock Detection:** system model, resource Vs communication deadlocks, deadlock prevention, avoidance, detection & resolution, centralized dead lock detection, distributed dead lock detection, path pushing algorithms, edge chasing algorithms.

#### UNIT III

**Agreement Protocols:** Introduction, System models, classification of Agreement Problem, Byzantine agreement problem, Consensus problem, Interactive consistency Problem, Solution to Byzantine Agreement problem, Application of Agreement problem, Atomic Commit in Distributed Database system.

**Distributed Resource Management:** Issues in distributed File Systems, Mechanism for building distributed file systems, Design issues in Distributed Shared Memory, Algorithm for Implementation of Distributed Shared Memory.

#### UNIT IV

**Failure Recovery in Distributed Systems:** Concepts in Backward and Forward recovery, Recovery in Concurrent systems, Obtaining consistent Checkpoints, Recovery in Distributed Database Systems.

**Fault Tolerance:** Issues in Fault Tolerance, Commit Protocols, Voting protocols, Dynamic voting protocols.



## **UNIT V**

**Transactions and Concurrency Control:** Transactions, Nested transactions, Locks, Optimistic Concurrency control, Timestamp ordering, Comparison of methods for concurrency control.

**Distributed Transactions:** Flat and nested distributed transactions, Atomic Commit protocols, Concurrency control in distributed transactions, Distributed deadlocks, Transaction recovery.

**Replication:** System model and group communication, Fault - tolerant services, highly available services, Transactions with replicated data.

### **TEXT BOOKS**

1. Distributed Systems Concepts and Design, G Coulouris, J Dollimore and T Kindberg, Third Edition, Pearson Education.
2. Distributed operating system – Andrew. S. Tanenbaum, PHI.

### **REFERENCES**

1. Advanced Concepts in Operating Systems, Mukesh Singhal, Niranjana G. Shivaratri Tata McGraw-Hill Publishing Co.Ltd. New Delhi, 2001
2. Distributed Systems – Principles and Paradigms, Andrew S. Tanenbaum, Maarten Van Steen, Second Edition, Prentice Hall of India, New Delhi 2008.
3. Distributed Operating Systems, Pradeep K. Sinha, PHI.
4. "Distributed Computing Principles and Applications", M.L. Liu, Pearson Addison Wesley, 2004.

## VNR Vignana Jyothi Institute of Engineering & Technology

IV Year B.Tech CSE, IT– I Sem

L	T/P/D	C
3	1	3

### (ITD1112) MOBILE APPLICATION DEVELOPMENT

#### UNIT I

**J2ME Overview :** Java 2 Micro Edition and the World of Java, Inside J2ME, J2ME and Wireless Devices, Android OS- Overview.

**Small Computing Technology:** Wireless Technology, Radio Data Networks, Microwave Technology, Mobile Radio Networks, Messaging, Personal Digital Assistants

#### UNIT II

**J2ME Architecture and Development Environment:** J2ME Architecture, Small Computing Device Requirements, Run-Time Environment, MIDlet Programming, Java Language for J2ME, J2ME Software Development Kits, Hello World J2ME Style, Multiple MIDlets in a MIDlet Suite, J2ME Wireless Toolkit.

**J2ME Best Practices and Patterns:** The Reality of Working in a J2ME World, Best Practices

#### UNIT III

**Commands, Items, and Event Processing:** J2ME User Interfaces, Display Class, The Palm OS Emulator, Command Class, Item Class, Exception Handling

**High-Level Display Screens:** Screen Class, Alert Class, Form Class, Item Class, List Class, Text Box Class, Ticker Class

**Low-Level Display Canvas:** The Canvas, User Interactions, Graphics, Clipping Regions, Animation

#### UNIT IV

**Record Management System:** Record Storage, Writing and Reading Records, Record Enumeration, Sorting Records, Searching Records, Record Listener.

**JDBC Objects:** The Concept of JDBC, JDBC Driver Types, JDBC Packages, Overview of the JDBC Process, Database Connection, statement Objects, Result set, Transaction Processing, Metadata, Data Types, Exceptions.

**JDBC and Embedded SQL:** Model Programs, Tables, Indexing, Inserting Data into Tables, Selecting Data from a Table, Metadata, Updating Tables, Deleting Data form a Table, Joining Tables, Calculating Data, Grouping and Ordering Data, Sub queries, VIEWS

#### UNIT V

**Generic Connection Framework:** The Connection, Hypertext Transfer Protocol, Communication Management Using HTTP Commands, Session Management, Transmit as a Background Process.

## **TEXT BOOKS**

1. J2ME: The Complete Reference, James Keogh, Tata McGrawHill.
2. Enterprise J2ME: Developing Mobile Java Applications – Michael Juntao Yuan, Pearson Education, 2004

## **REFERENCES**

1. Beginning Java ME Platform, Ray Rischpater, Apress, 2009
2. Beginning J2ME: From Novice to Professional, Third Edition, Sing Li, Jonathan B. Knudsen, Apress, 2005
3. Kicking Butt with MIDP and MSA: Creating Great Mobile Applications, 1st edition, J. Knudsen, Pearson.

## VNR Vignana Jyothi Institute of Engineering & Technology

IV Year B.Tech CSE, IT– I Sem	L	T/P/D	C
Elective - I	3	0	3

### (ITD1113) NETWORK MANAGEMENT SYSTEMS

#### UNIT I

**Data communications and Network Management Overview :** Analogy of Telephone Network Management, Communications protocols and Standards, Case Histories of Networking and Management, Challenges of Information **Technology Managers, Network Management:** Goals, Organization, and Functions, Network and System Management, Network Management System Platform, Current Status and future of Network Management.

#### UNIT II

**SNMPV1 Network Management:** Organization and Information and Information Models.

**Managed network:** The History of SNMP Management, The SNMP Model, The Organization Model, System Overview, The Information Model.

**SNMPv1 Network Management:** Communication and Functional Models. The SNMP Communication Model, Functional model.

#### UNIT III

**SNMP Management: SNMPv2:** Major Changes in SNMPv2, SNMPv2 System Architecture, SNMPv2 Structure of Management Information, the SNMPv2 Management Information Base, SNMPv2 Protocol.

**SNMP Management: RMON:** What is Remote Monitoring? , RMON SMI and MIB, RMON1, RMON2, ATM Remote Monitoring, A Case Study of Internet Traffic Using RMON

#### UNIT IV

**Telecommunications Management Network:** Why TMN? , Operations Systems, TMN Conceptual Model, TMN Standards, TMN Architecture, TMN Management Service Architecture, An Integrated View of TMN, implementation Issues.

#### UNIT V

**Web-Based Management:** NMS with Web Interface and Web-Based Management, Web Interface to SNMP Management, Embedded Web-Based Management, Desktop management Interface, Web-Based Enterprise Management, **WBEM:** Windows Management Instrumentation, Java management Extensions, Management of a Storage Area Network , Future Directions.

**TEXT BOOKS**

1. Network Management, Principles and Practice, Mani Subramanian, Pearson Education.
2. Principles of Network System Administration, Mark Burges, Wiley Dreamtech.

**REFERENCES**

1. Network management, Morris, Pearson Education.
2. Distributed Network Management, Paul John Wiley.

## VNR Vignana Jyothi Institute of Engineering & Technology

IV Year B.Tech CSE , IT– I Sem	L	T/P/D	C
Elective - I	3	0	3

### (ITD1114) BUILDING ENTERPRISE APPLICATIONS

#### UNIT I

Introduction to enterprise applications and their types, software engineering methodologies, life cycle of raising an enterprise application, introduction to skills required to build an enterprise application, key determinants of successful enterprise applications, and measuring the success of enterprise applications

#### UNIT II

Inception of enterprise applications, enterprise analysis, business modeling, requirements elicitation, use case modeling, prototyping, non functional requirements, requirements validation, planning and estimation

#### UNIT III

Concept of architecture, views and viewpoints, enterprise architecture, logical architecture, technical architecture - design, different technical layers, best practices, data architecture and design – relational, XML, and other structured data representations, Infrastructure architecture and design elements - Networking, Internetworking, and Communication Protocols, IT Hardware and Software, Middleware, Policies for Infrastructure Management, Deployment Strategy, Documentation of application architecture and design

#### UNIT IV

Construction readiness of enterprise applications - defining a construction plan, defining a package structure, setting up a configuration management plan, setting up a development environment, introduction to the concept of Software Construction Maps, construction of technical solutions layers, methodologies of code review, static code analysis, build and testing, dynamic code analysis – code profiling and code coverage

#### UNIT V

Types and methods of testing an enterprise application, testing levels and approaches, testing environments, integration testing, performance testing, penetration testing, usability testing, globalization testing and interface testing, user acceptance testing, rolling out an enterprise application.

**TEXT BOOKS**

1. Raising Enterprise Applications – Published by John Wiley, authored by Anubhav Pradhan, Satheesha B. Nanjappa, Senthil K. Nallasamy, Veerakumar Esakimuthu
2. Building Java Enterprise Applications – Published by O'Reilly Media, authored by Brett McLaughlin

**REFERENCES**

1. Software Requirements: Styles & Techniques – published by Addison-Wesley Professional
2. Software Systems Requirements Engineering: In Practice – published by McGraw-Hill/Osborne Media
3. Managing Software Requirements: A Use Case Approach, 2/e – published by Pearson
4. Software Architecture: A Case Based Approach – published by Pearson

## VNR Vignana Jyothi Institute of Engineering & Technology

IV Year B.Tech IT-I Sem	L	T/P/D	C
Elective - I	3	0	3

### (ITD1115) COMPUTER GRAPHICS

#### 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 GEOMETRICAL TRANSFORMATION 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. Computer Graphics C Version by Donald Hearn & M. Pauline Baker Pearson Education, New Delhi, 2004
2. "Computer graphics principles & practice", second edition in c, Foley, VanDam, Feiner and Hughes, Pearson Education

### **REFERENCES**

1. "Procedural elements for Computer Graphics", David Rogers, Tata Mc Graw hill, 2<sup>nd</sup> edition
2. "Computer Graphics", Steven Harington, TMH
3. "Principles of interactive Computer Graphics" Neuman and sproul, TMH
4. "Computer Graphics" Second Edition zhigand xiang, Roy Plastock, schaums outlines, TMH Edition

## VNR Vignana Jyothi Institute of Engineering & Technology

IV Year B.Tech IT-I Sem	L	T/P/D	C
Elective - I	3	0	3

### (CSE1117) SOFTWARE PROJECT MANAGEMENT

#### UNIT I

**Conventional Software Management:** The waterfall model, conventional software Management performance.

**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

**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, Joel Henry, Pearson Education.
2. Software Project Management, Bob Hughes and Mike Cotterell: Tata McGraw- Hill Edition.
3. Software Project Management in practice, Pankaj Jalote, Pearson Education.2005.

## VNR Vignana Jyothi Institute of Engineering & Technology

IV Year B.Tech IT– I Sem  
Elective - II

L	T/P/D	C
3	0	3

### (ITD1116) COMPUTER FORENSICS

#### 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, using 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 Stuart, CENGAGE Learning.

## **REFERENCE BOOKS**

1. Real Digital Forensics by Keith J.Jones, Recharad 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.

## VNR Vignana Jyothi Institute of Engineering & Technology

IV Year B.Tech CSE, IT– I Sem	L	T/P/D	C
Elective - II	3	0	3

### (CSE1112) CRYPTOGRAPHY & NETWORK SECURITY

#### UNIT I

**INTRODUCTION:** Security Attacks (Interruption, Interception, Modification and Fabrication), Security Services (Confidentiality, Authentication, Integrity, Non-repudiation, access Control and Availability) and 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 HASHFUNCTIONS:**

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

#### UNIT IV

**NETWORK 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 – and related Threats – Virus Counter measures – Firewall Design Principles – Trusted Systems.

#### TEXT BOOKS

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

## REFERENCES

1. "Security in Computing"; Charles B. Pfleeger, Shari Lawrence Pfleeger, Third Edition, Pearson Education, 2003
2. "Cryptography and Network Security", Atul Kahate, Tata McGraw-Hill, 2003.
3. "Hack Proofing your network" by Ryan Russell, Dan Kaminsky, Rain Forest, Puppy, Joe Grand, David Ahmad, Hal Flynn Ido Dubrawsky, Steve W. Manzuik and Ryan Permech, Wiley Dreamtech

## VNR Vignana Jyothi Institute of Engineering & Technology

IV Year B.Tech CSE, IT– I Sem

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Elective - II

3 0 3

### (CSE1116) DESIGN 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 Pattern Part-I :Adapter, Bridge, Composite

#### UNIT-IV

**Structural Pattern Part-II :** Decorator, açade, Flyweight, Proxy. Behavioral Patterns Part-I :Chain of Responsibility, Command, Interpreter, Iterator. Behavioral Patterns Part-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-sp
5. Design Patterns Explained By Alan Shalloway, Pearson Education.



## VNR Vignana Jyothi Institute of Engineering & Technology

IV Year B.Tech CSE, IT– I Sem	L	T/P/D	C
Elective - II	3	0	3
<b>(ITD1118) WIRELESS AND MOBILE COMPUTING</b>			

### UNIT I

#### Introduction to Wireless Networks:

Wireless LAN: Infrared vs radio transmission, Infrastructure and ad hoc networks, IEEE 802. 11-System architecture, protocol architecture, Physical layer, Medium access control layer and MAC management. HIPER LAN-protocol architecture, physical layer channel access control sub layer, information bases and networking. Bluetooth-User scenarios, Physical layer, MAC Layer, Networking, Security and Link Management.

### UNIT II

**GSM:** Mobile Services, System Architecture, Radio Interface, Protocols, Localization and Calling, Handover, Security, and New Data Services.

**Mobile computing (MC):** Introduction to MC, Novel Applications, Limitations and Architecture

**(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:** IP and Mobile IP Network Layers, Packet Delivery and Handover Management, Registration, Tunneling and Encapsulation, Route Optimization, DHCP.

**Mobile Transport Layer:** Conventional TCP/IP Protocols, Indirect TCP, Snooping TCP, Mobile TCP, Other Transport Layer Protocols for Mobile Networks.

### UNIT IV

**Database Issues:** Database Hoarding& Caching Techniques, Client –Server Computing & Adaptation, Transactional Models, Query Processing, Data Recovery Process & QoS Issues.

**Data Dissemination and Synchronization :** Communications Asymmetry Classification of Data Delivery Mechanisms , Data Dissemination Broadcast Models , Selective Tuning and Indexing Methods ,Digital Audio and Video Broadcasting (DAB & DVB).Data Synchronization –Introduction ,Software ,and Protocols

### UNIT V

**Mobile Ad hoc Networks (MANETs):** Introduction , localization, MAC issues, Routing protocols, global state routing(GSR), Destination sequenced distance vector routing (DSDV), Dynamic source routing (DSR), Ad Hoc on demand distance vector routing (AODV), Temporary ordered routing algorithm (TORA), QoS in Ad Hoc Networks, Applications & Challenges of a MANET .

## **TEXT BOOKS**

1. "Handbook of Wireless Networks and Mobile Computing", Stojmenovic and Cacute, Wiley, 2002, I
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

## VNR Vignana Jyothi Institute of Engineering & Technology

IV Year B.Tech CSE, IT– I Sem

L	T/P/D	C
0	3	2

### (ITD1208) WEB TECHNOLOGIES LABORATORY

#### OBJECTIVE

To create a fully functional website and to Develop an online Book store using which we can sell books (Ex. amazon .com).

#### HARDWARE AND SOFTWARE REQUIRED

1. A working computer system with either Windows or Linux
2. A web browser either IE or firefox
3. Tomcat web server
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:



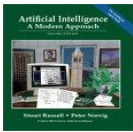





Web Site Name				
Logo				
Home	Login	Registration	Catalogue	Cart
CSE ECE EEE CIVIL	Login :		<input type="text"/>	
	Password:		<input type="text"/>	
	<input type="submit" value="Submit"/>		<input type="submit" value="Reset"/>	

3) CATALOGUE 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.
3. Price.
4. Add to cart button.

Logo	Web Site Name			
Home	Login	Registration	Catalogue	Cart
CSE		Book : XML Bible Author : Winston Publication : Wiely	\$ 40.5	
ECE				
EEE		Book : AI Author : S.Russel Publication : Princeton hall	\$ 63	
CIVIL				
		Book : Java 2 Author : Watson Publication : BPB publications	\$ 35.5	
		Book : HTML in 24 hours Author : Sam Peter Publication : Sam publication	\$ 50	

## 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	Book name	Price	Quantity	Amount
ECE				
EEE	Java 2	\$35.5	2	\$70
CIVIL	XML bible	\$40.5	1	\$40.5
			Total amount -	\$130.5

### 5) REGISTRATION PAGE:

Create a "registration form "with the following fields

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

### WEEK 3

#### VALIDATION:

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

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

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

```
<html>
<head>
<style type="text/css">
.xlink {cursor:crosshair}
.hlink{cursor:help}
</style>
</head>
<body>
<b>
<a href="mypage.htm" class="xlink">CROSS LINK</a>
<br>
```

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

## WEEK 5

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

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

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

Display the XML file as follows.

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

Use XML schemas XSL and CSS for the above purpose.

Note: Give at least for 4 books. It should be valid syntactically.

Hint: You can use some xml editors like XML-spy

## WEEK 6

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 servlet 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 servlet 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.

## VNR Vignana Jyothi Institute of Engineering & Technology

IV Year B.Tech IT– I Sem

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### (ITD1209) MOBILE APPLICATION DEVELOPMENT LABORATORY

#### Objective:

In this lab, a student is expected to design, implement, document and present a mobile client/server system using standard Java and Java 2 Micro Edition (J2ME) platform. Specifically it is required to design and implement a system that consists mainly of a mobile client (MC) and a Proxy Server (PS). MC will be written in J2ME, MIDP 2.0, while PS will be written in standard Java. It is necessary to use a mobile phone emulator to develop and demonstrate the experiments.

It may be necessary to use other components or existing resources (servers) as needed. For instance a database local to PS or a web service available on the Internet that can be invoked by the PS.

#### Week - 1: Installation of Java Wireless Toolkit (J2ME)

1) If the Java Development Kit (JDK) is not there or only having the Java Runtime Environment (JRE) installed, install the latest JDK from <http://java.sun.com/javase/downloads/index.jsp>. Current stable release of Java is JDK 6 Update 7 but check the web page in case there are newer non-beta releases available.

2) Next, download the Java Wireless Toolkit (formerly called J2ME Wireless Toolkit) from: <http://java.sun.com/products/sjwtoolkit/download.html>.

3) Run the installer (for example, for Windows it is: sun\_java\_wireless\_toolkit- 2\_5\_2-windows.exe). The installer checks whether a compatible Java environment has been pre-installed. If not, it is necessary to uninstall old versions of Java and perform Step 1 again. Once after successful installation of Java and the tool kit compile this program and run the following program in the toolkit. Steps to run this program in toolkit:

1. Start -> All Programs -> Sun Java Tool Kit -> Wireless Tool Kit
2. Click New Project – Enter Project Name -> Enter Class Name -> Click on Create Project.
3. Choose appropriate API Selection and Configurations.
4. Place Java Source file in WTK2.1 / WTK2.2\apps\projectname\src
5. Build the Project.
6. Run the Project.

```
import javax.microedition.lcdui.*;
import javax.microedition.midlet.*;
public class HelloWorld extends MIDlet{
    private Form form;
    private Display display;
```

```

public HelloWorld(){
    super();
}
public void startApp(){
    form = new Form("Hello World");
    String msg = "Hello World!!!!!!";
    form.append(msg);
    display = Display.getDisplay(this);
    display.setCurrent(form);
}
public void pauseApp(){}
public void destroyApp(boolean unconditional){
    notifyDestroyed();
}
}
}

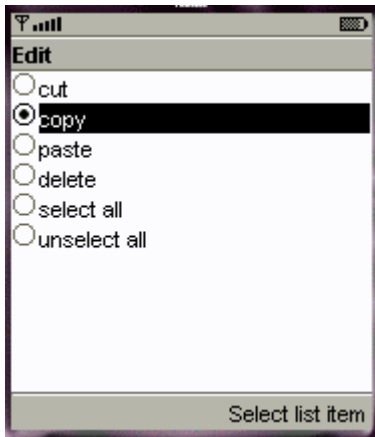
```

### Week - 2 Working with J2ME Features:

Working with J2ME Features: Say, creating a Hello World program Experiment with the most basic features and mobile application interaction concepts (lists, text boxes, buttons, radio boxes, soft buttons, graphics, etc)

2.1 Create a program which creates to following kind of menu.

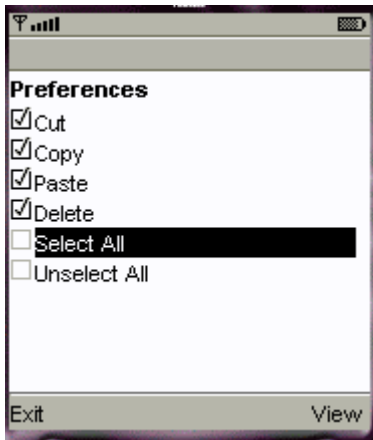
- \* cut
- \* copy
- \* paste
- \* delete
- \* select all
- \* unselect all



## 2.2 Event Handling.

Create a menu which has the following options:

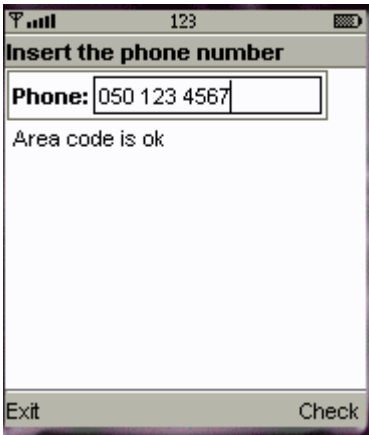
- \* cut - can be on/off
- \* copy - can be on/off
- \* paste - can be on/off
- \* delete - can be on/off
- \* select all - put all 4 options on
- \* unselect all - put all 4 options off



## 2.3. Input checking

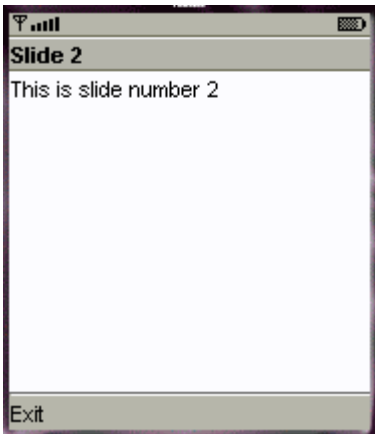
Create an MIDP application which examine, that a phone number, which a user has entered is in the given format.

- \* Area code should be one of the following: 040, 041, 050, 0400, 044
- \* There should 6-8 numbers in telephone number (+ area code)



### Week - 3 Threads & High Level UI:

3.1. Create a slide show which has three slides, which includes only text. Program should change to the new slide after 5 seconds. After the third slide program returns to the first slide.

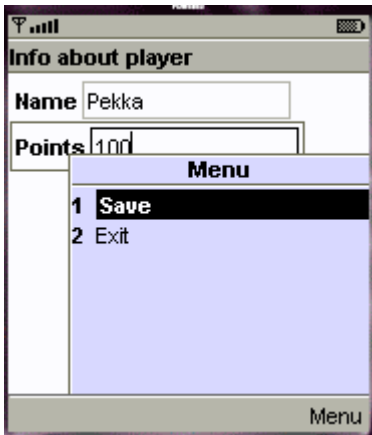


### 3.2 High-level UI

Create a MIDP application, which show to the user 5-10 quiz questions. All questions have 4 possible options and one right option exactly. Application counts and shows to the user how many right answers were right and shows them to user.



3.3 Create a MIDP application, where the user can enter player name and points. The program saves the information to the record using RMS at MIDP device. Program should also print out the top 10 player list to the end user. You can use this class in your game if you made own class for saving and reading record sets.



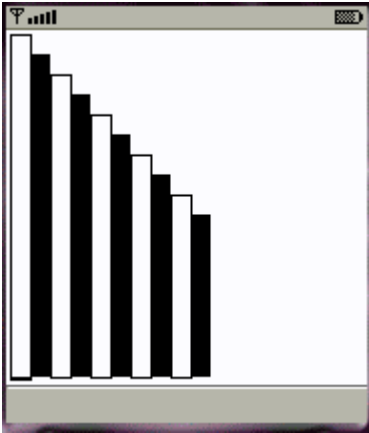


## Week - 4 Working on Drawing and Images

4.1 Create a slide show which has three slides, which includes pictures at PNG format. Program should change to the new slide other 5 seconds.



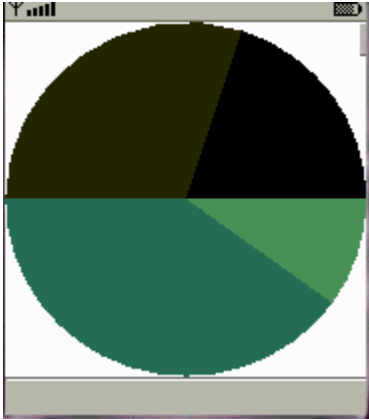
4.2 Create a MIDP application, which draws a bar graph to the display. Data values can be given at int[] array.



4.3 Create a MIDP application, which draws a bar graph to the display. Data values can be given at `int[]` array. You can enter four data (integer) values to the input text field.

A screenshot of a mobile application window titled "Draw Pie". The window has a title bar with a signal strength indicator on the left, the number "123" in the center, and a battery icon on the right. Below the title bar, the text "Draw Pie" is displayed. There are four input fields, each preceded by a label: "1. value" with the value "20", "2. value" with the value "30", "3. value" with the value "40", and "4. value" with the value "10". The input fields are rectangular boxes. At the bottom of the window, there are two buttons: "Exit" on the left and "OK" on the right.





## **Week - 5 Developing Networked Applications using the Wireless Toolkit**

### Creating a Simple Client-Server Application

Create, compile and run a basic UDP-based client-server application.

### Creating the Datagram Server project

- 1) Click on Wireless Toolkit 2.5.2 under the group: All Programs→Sun Java (TM) Wireless Toolkit 2.5.2.
- 2) Click on 'New Project...' button.
- 3) Enter project name as 'DatagramServer'. Enter MIDlet name as 'DatagramServer'. Note that the Midlet name is the same as the name of the class in the source code, which extends the MIDlet class, otherwise the application won't run.
- 4) Another window pops up where it is required to select a target platform. Select 'MIDP 1.0' from the drop down list.
- 5) After clicking OK, the project is created; and the Wireless Toolkit tells that the name of the folder where source code files are created. The path of the source code folder is displayed in the debug output window.

### Creating and Compiling the DatagramServer source files

The Wireless Toolkit does not come with an IDE by default so Use any IDE or a text editor like Notepad.

- 1) Create a new text file called DatagramServer.java in the source folder of the project. The exact path of this folder is displayed in the Wireless Toolkit window.
- 2) Paste contents DatagramServer.java from into the source file.

### Running your Server application on the Phone simulator

- 1) After compiling the project successfully, click on the Run button in the Wireless Toolkit window.
- 2) A graphical window depicting a phone handset will appear with the name of your application highlighted on its screen as shown below.

3) To start the application, click on the right soft-key (marked with a dot) below the 'Launch' command.

4) The phone simulator might ask if it is OK to run the network application. Select 'Yes' by clicking on the appropriate soft-key. The server is now up and running.

5) Keep the server running during the creation, compilation and running of the Datagram Client application.

Creating the Datagram Client project

1) Use the same instance of the Wireless Toolkit that is used for creating and compiling the Datagram Server project.

2) Click on 'New Project...' button.

3) A new window pops up. Enter project name as 'DatagramClient'. Enter MIDlet name as 'DatagramClient'. Note that the Midlet name is the same as the name of the class in the source code, which extends the MIDlet class.

4) Another window pops up where one has to select a target platform. Select 'MIDP 1.0' from the drop down list.

5) After clicking OK, the project is created and the Wireless Toolkit tells where to place the source code files. The path of the source code folder is displayed in the debug output window as explained before.

Creating and Compiling the DatagramClient source files

1) Create a new text file called DatagramClient.java in the source folder of the project.

2) Paste contents DatagramClient.java into the source file.

3) Then click on the Build button in the Wireless Toolkit window. If the compilation is OK, it will say Build Complete in the window's debug output window, otherwise it will show the errors. Note: In the source code, use the `System.out.println()` statement to output debug information to this window.

Running your Client application on the Phone simulator

1) After compiling the project successfully, click on the Run button in the Wireless Toolkit window.

2) A graphical window depicting a phone handset will appear with the name of the application highlighted on its screen.

3) To start the application, click on the right soft-key (marked with a dot) below the 'Launch' command.

4) The phone simulator might ask if it is OK to run the network application. Select 'Yes' by clicking on the appropriate soft-key. The client is now up and running.

5) When the client executes on the phone simulator, one should see a text box with the caption 'Message'. Enter any message and press the right soft-key (corresponding to Send). If the client-server application is working properly, the screen of the server phone will display the message sent by the client and the client screen will now display a message sent by the server in response. The response message from the server is the original client message in reverse.

6) Try various features of the phone simulator including the different look-and feel options.

### **Week - 6 Authentication with a Web Server**

**6.1** Write a sample program to show how to make a SOCKET Connection from j2me phone.

This J2ME sample program shows how to how to make a SOCKET Connection from a J2ME Phone. Many a times there is a need to connect backend HTTP server from the J2ME application. shows how to make a SOCKET connection from the phone to port 80.

### **6.2** Login to HTTP Server from a J2ME Program

This J2ME sample program shows how to display a simple LOGIN SCREEN on the J2ME phone and how to authenticate to a HTTP server.

Many J2ME applications for security reasons require the authentication of the user. This free J2ME sample program, shows how a J2ME application can do authentication to the backend server.

**Note:** Use Apache Tomcat Server as Web Server and Mysql as Database Server.

### **Week - 7 & 8 Web Application using J2ME**

The following should be carried out with respect to the given set of application domains: (Assume that the Server is connected to the well-maintained database of the given domain. Mobile Client is to be connected to the Server and fetch the required data value/information)

- Students Marks Enquiry
- Town/City Movie Enquiry
- Railway/Road/Air (For example PNR) Enquiry/Status
- Sports (say, Cricket) Update
- Town/City Weather Update
- Public Exams (say Intermediate or SSC)/ Entrance (Say EAMCET) Results Enquiry

Divide Student into Batches and suggest them to design database according to their domains and render information according the requests.

## VNR Vignana Jyothi Institute of Engineering & Technology

IV Year B.Tech , IT– II Sem

L	T/P/D	C
3	0	3

### (CSE1114) SOFT COMPUTING

#### UNIT I

Introduction : Neural Networks, Fuzzy Logic, Genetic Algorithms, Hybrid Systems, Soft Computing, Soft Computing Constituents, Soft Computing Characteristics. Artificial Neural Networks : Introduction, Fundamental Concept, Evolution of Neural Networks, Basic models of ANN, Important Terminologies.

#### UNIT-II

Supervised Learning Networks : Introduction, Perceptron Networks, Adaptive Linear Neuron, Back propagation Network. Associative Memory Networks : Introduction, Training Algorithms for pattern association and Hopfield Networks.

#### UNIT-III

Unsupervised Learning Network : Introduction, Fixed Weight Competitive Nets, Kohonen Self-Organizing Feature Maps, Counter Propagation Networks.

Fuzzy Sets : Introduction, Classical Sets, Fuzzy Sets, Classical Relations, Fuzzy Relations

#### UNIT-IV

Membership functions- Features, Fuzzification, Membership value assignments, Defuzzification Methods, Fuzzy Arithmetic, Fuzzy Measures, Fuzzy Inference Systems, Fuzzy Logic Control Systems

#### UNIT-V

Genetic Algorithms- Introduction, Basic operators and terminology, Traditional Algorithm vs Genetic Algorithm, Simple GA, General GA, Classification of GA, Genetic Programming, Applications of GA.

Applications of Soft Computing : Internet Search Technique, Hybrid Fuzzy Controllers.

#### TEXT BOOKS:

1. Principles of Soft Computing- S N Sivanandam, S N Deepa, Wiley India, 2007
2. Neuro-Fuzzy and Soft Computing A Computational Approach to Learning and Machine Intelligence – J.S.R.Jang, C.T.Sun, E.Mizutani, PHI

**REFERENCES:**

1. Artificial Intelligence and Soft Computing- Behavioral and Cognitive Modeling of the Human Brain- Amit Konar, CRC press, Taylor and Francis Group.
2. Soft Computing and Intelligent System Design -Fakhreddine O Karray, Clarence D Silva,. Pearson Edition, 2004.
3. Artificial Intelligence – Patric Henry Winston – Third Edition, Pearson Education.
4. Fuzzy Sets and Fuzzy Logic Theory and Applications – George J.Klir, Bo Yuan
6. Genetic Algorithms in Search, Optimization and Machine Learning – David E.Goldberg Addison-Wesley
7. An Introduction to Genetic Algorithms – Melanie Mitchell, MIT Press
8. Artificial Neural Networks – B.Yegnanarayana.

## VNR Vignana Jyothi Institute of Engineering & Technology

IV Year B.Tech IT-II Sem	L	T/P/D	C
Elective - III	3	0	3

### (CSE1115) ADVANCED COMPUTER ARCHITECTURE

#### 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-** review of the ABCs of caches - 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 easy pieces..

**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 Kaufmann (An Imprint of Elsevier)

#### REFERENCES

1. "Computer Architecture and parallel Processing" Kai Hwang and A.Briggs International Edition McGraw-Hill.
2. Advanced Computer Architectures, Dezso Sima, Terence Fountain, Peter Kacsuk, Pearson.
3. Parallel Computer Architecture, A Hardware / Software Approach, David E. Culler, Jaswinder Pal singh with Anoop Gupta, Elsevier

## VNR Vignana Jyothi Institute of Engineering & Technology

IV Year B.Tech IT–II Sem	L	T/P/D	C
Elective - III	3	0	3

### (ITD1121) INFORMATION RETRIEVAL SYSTEMS

#### 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 Retrieval By Ricardo Baeza-Yates, Pearson Education, 2007.

## **REFERENCE BOOKS**

1. Information Retrieval: Algorithms and Heuristics By David A Grossman and Ophir Frider, 2<sup>nd</sup> Edition, Springer.
2. Frakes, W.B., Ricardo Baeza-Yates: Information Retrieval Data Structures and Algorithms, Prentice Hall, 1992.
3. Modern Information Retrieval By Yates Pearson Education.
4. Information Storage & Retrieval By Robert Korfhage – John Wiley & Sons
5. Natural Language Processing and Information Retrieval, T.Siddiqui and U.S.Tiwary, Oxford University Press.



## VNR Vignana Jyothi Institute of Engineering & Technology

IV Year B.Tech CSE, IT– II Sem	L	T/P/D	C
Elective - III	3	0	3

### (CSE1119) BUSINESS INTELLIGENCE APPLICATIONS

#### UNIT I

##### Introduction to Business Intelligence

Introduction to digital data and its types – structured, semi-structured and unstructured. Introduction to OLTP, OLAP (MOLAP, ROLAP, HOLAP), BI Definitions & Concepts.

#### UNIT II

##### Business Intelligence framework

BI Framework Data Warehousing concepts and its role in BI, BI Infrastructure Components – BI Process, BI Technology, BI Roles & Responsibilities, Business Applications of BI, BI best practices

#### UNIT III

##### Basics of Data Integration (Extraction Transformation Loading),

Concepts of data integration, needs and advantages of using data integration, introduction to common data integration approaches, Meta data - types and sources, Introduction to data quality, data profiling concepts and applications, introduction to ETL using Pentaho data Integration (formerly Kettle)

#### UNIT IV

##### Introduction to Multi-Dimensional Data Modeling

Introduction to data and dimension modeling, multidimensional data model, ER Modeling vs. multi dimensional modeling, concepts of dimensions, facts, cubes, attribute, hierarchies, star and snowflake schema, introduction to business metrics and KPIs, creating cubes using Microsoft Excel

#### UNIT V

##### Basics of Enterprise Reporting

A typical enterprise, Malcolm Baldrige - quality performance framework, balanced scorecard, enterprise dashboard, balanced scorecard vs. enterprise dashboard, enterprise reporting using MS Access / MS Excel, best practices in the design of enterprise dashboards

## REFERENCES

1. Business Intelligence by David Loshin
2. Business intelligence for the enterprise by Mike Biere
3. Business intelligence roadmap by Larissa Terpeluk Moss, ShakuAtre
4. An introduction to Building the Data Warehouse – IBM
5. Business Intelligence For Dummies – Swain Scheps
6. Successful Business Intelligence: Secrets to making Killer BI Applications by Cindi Howson
7. Information dashboard design by Stephen Few

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IV Year B.Tech CSE,IT– II Sem  
Elective - III

L	T/P/D	C
3	0	3

### (ECE1113) DIGITAL IMAGE PROCESSING

#### 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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**IV Year B.Tech CSE,IT–II Sem**  
**Elective - IV**

<b>L</b>	<b>T/P/D</b>	<b>C</b>
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**(ITD1122) 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

## 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, IT– II Sem	L	T/P/D	C
Elective - IV	3	0	3

### (ECE1124) EMBEDDED REAL TIME OPERATING SYSTEMS

#### UNIT-I

##### FUNDAMENTALS OF EMBEDDED SYSTEMS

Definition – Classification of Embedded Systems - Processors in the system - Other Hardware units. Software components - Examples for embedded systems, Design issues and trends

#### UNIT 2:

##### EMBEDDED HARDWARE DEVELOPMENT ENVIRONMENT:

Processor Architecture- Structured units of a processor - Processor selection factors. Common memory devices - Memory selection - Memory map - Internal devices & I/O devices, Serial devices - Parallel port devices, Timer and Counting devices - Direct memory access, Communication Interface Standards,.

#### UNIT 3:

##### EMBEDDED SOFTWARE DEVELOPMENT ENVIRONMENT: ‘

Embedded System Development Process, Embedded Operating systems, Types of Embedded Operating systems, Host and Target machines, Linkers/Locators for embedded software, getting embedded software into the target system, Testing on host machine.

#### UNIT 4:

##### REAL TIME OPERATING SYSTEMS CONCEPTS -I:

Typical OS structure - RTOS structure - The context of its use - Schedule management for multiple tasks - Scheduling in real time - RTOS task scheduling models – Round Robin, Round Robin with Interrupts, Priority driven- Preemptive and Non-preemptive scheduling

#### UNIT 5:

##### REAL TIME OPERATING SYSTEMS CONCEPTS -II:

Tasks and Task states, Tasks and Data, Semaphores and shared data, Message queues, Mailboxes and Pipes, Timer functions, events, Memory management, Interrupt routines in an RTOS environment.

Case study of RTOS using MUCOS. Case study for RTOS based programming - Coding for Automatic Chocolate vending machine using MUCOS.

**TEXT BOOKS :**

1. An Embedded Software Primer – David E. Simon, Pearson Ed., 2005.
2. Embedded systems - architecture, programming and design - Raj Kamal; Tata McGraw Hill

**REFERENCES :**

1. Real time Systems”, J. W. S. Liu, Pearson
2. The 8051 Microcontroller & Embedded Systems using Assembly and C by Ayala & Gadre, Cengage Publications



## VNR Vignana Jyothi Institute of Engineering & Technology

IV Year B.Tech IT– II Sem	L	T/P/D	C
Elective - IV	3	0	3

### (ECE1155) VLSI SYSTEM DESIGN

#### 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.

**GATE LEVEL DESIGN AND LAYOUT:** Architectural issues, Switch logic networks: Gate logic, Alternate gate circuit: Pseudo-NMOS, Dynamic CMOS logic

#### UNIT IV

**SUBSYSTEM DESIGN:** Subsystem Design, Shifters, Adders, ALUs, Multipliers: Array multiplier, Serial-Parallel multiplier, Parity generator, Comparators, Zero/One Detectors, Up/Down Counter .

#### UNIT V

**Array Subsystems:** SRAM, DRAM, ROM, Serial Access Memories, Content Addressable Memory

#### TEXT BOOKS:

1. Basic VLSI design by Douglas A, 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.

#### REFERENCES:

1. CMOS logic circuit Design – John P. Uyemura , Springer , 2007
2. Modern VLSI Design –Wayne Wolf, Pearson Education , 3<sup>rd</sup> Edition, 1997.
3. VLSI Design – A. Albert Raj, Latha PHI, 2008.

## VNR Vignana Jyothi Institute of Engineering & Technology

IV Year B.Tech IT–II Sem  
Elective - IV

L	T/P/D	C
3	0	3

### (EIE1118) ROBOTICS AND AUTOMATION

#### UNIT I

##### Basic Concepts & Power Sources

###### Fundamentals:

An over view of Robotics, classification of Robots, Robot Component, Robot degrees of freedom, Robot Joints, Robot Coordinates, Robot reference frames, Programming modes, Robot Characteristics.

###### Actuators:

Characteristics of activating system, comparison of activating system Hydraulic devices, Pneumatic devices, electric motors, magnetostrictive actuators.

#### UNIT II

##### Sensors, Manipulators and Grippers

**Sensors:** Sensors characteristics, Position sensors, velocity sensors, acceleration sensors, torques sensors, micro switches, lighten infrared sensors, touch and tactile sensors, proximity sensors, range finders.

**Manipulators:** Construction of Manipulators, Manipulator Dynamic and Force Control, Electronic and Pneumatic manipulators.

**Grippers:** Robot end effectors

Classification, drive system for Gripper, Mechanical Grippers, Magnetic Grippers, Vacuum Grippers, Adhesive Grippers, Hooks, Scoops and other Miscellaneous Devices, Gripper force Analysis and Gripper Design, Active and passive Grippers.

#### UNIT III

##### Kinematics & Path Planning

Robots as mechanisms, matrix representation, homogeneous transformation matrices, inverse of transformation of matrices, forward and inverse kinematics of robots, denavit-hartenberg representation of forward kinematics equations of robots, the inverse kinematic solution of robots, inverse kinematic programming of Robots, Jacobian, Differential motions of a frame, interpretation of the differential change, differential changes between frames, differential motions of a robot and its handframe, lagrangian mechanics, effective moments of a inertia, dynamic equations for multiple degree of freedom robot, static force analysis of robots.

## **UNIT IV**

### **Low level and high level vision**

Image acquisition, Illumination Techniques, Imaging Geometry, Some Basic Relationships between Pixels, Segmentation, Description, Segmentation and Description of 3-D Structures, Recognition, Interpretation.

## **UNIT V**

### **Robot Applications**

**Material Transfer and Machine loading/unloading:** General Considerations in Robot Material Handling, Material Transfer application, Machine loading and unloading. Liquid handling and pumping.

**Processing operations:** Spot welding, Continuous Arc Welding, Spray Coating, other processing operations using Robots,

**Assembly and Inspection:** Assembly and Robot Assembly automation, Parts Presentation methods, Assembly operations, compliance and the Remote Center Compliance (RCC) Device, Assembly system configuration, Adaptable-Programmable assembly system, Designing for Robotic Assembly, Inspection Automation.

### **TEXT BOOKS:**

1. Introduction to Robotics, Analysis, System, Applications by Saeed B. Niku.- PHI
2. Robotics / Fu K S/ McGraw Hill.
3. Industrial Robotics / Groover M P /Pearson Edu.

### **REFERENCES:**

1. Fundamentals of Robotics Analysis and control. By Robert J.Schelling, PHI
2. I Robotics Technology and Flexible Automation / SR Deb
3. Robotic Engineering / Richard D. Klafter, Prentice Hall