ACADEMIC REGULATIONS
COURSE STRUCTURE
AND
DETAILED SYLLABUS

U5

Computer Science and Engineering

For
B.Tech Four Year Degree Course
(Applicable for the batch admitted in 2011-2012)

(II & III year syllabus only)

MALLA REDDY ENGINEERING COLLEGE
(AUTONOMOUS)
(Approved by AICTE & Affiliated to JNTUH)
Maisammaguda, Dhulapally (PO) Via (Hakimpet), Secunderabad- 500 014.
www.mrec.ac.in
E-mail: mrec.2002@gmail.com

MALLA REDDY ENGINEERING COLLEGE
(AUTONOMOUS)

Maisammaguda,Dhulapally,Post Via (Hakimpet), Secunderabad- 500 014.

Academic Regulations for B. Tech (Regular)

(MR11 Regulations)

(Effective for the students admitted into I year from the Academic Year 2011-2012 onwards)

1. Award of B.Tech. Degree

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

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

ii. Register for 200 credits and secure 200 credits

2. 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.

3. Courses of study

Malla Reddy Engineering College offers the following courses of study leading to B.Tech. Degree of the Jawaharlal Nehru Technological University Hyderabad (JNTUH), Hyderabad.

1. Civil Engineering
2. Computer Science & Engineering
3. Electrical & Electronics Engineering
4. Electronics & Communications Engineering
5. Information Technology
6. Mechanical Engineering

4. Credits

	I Year		Semester	
	Periods / Week	Credits	Periods / Week	Credits
Theory	03	06	03	03
	02	04	--	--
Practical	03	04	03	02
Drawing	02T/03D	04	03 06	02 04
Mini Project	--	--	--	02
Comprehens-ive Viva Voce	--	--	--	02
Seminar	--	--	6	02
Project	--	--	15	10

5. Distribution and Weightage of Marks

i. The performance of a student is evaluated in each semester or I year , subject-wise, with a maximum of 100 marks for theory and 75 marks for practical examinations. The subject –wise syllabus is spread over **1-8 units**. Out of 100 marks in Theory, 25 marks are for internal exam and out of 75 marks in practicals, 25 marks are for internal assessment. In semester system, 2 internal exams are conducted and each exam for 20 marks. Better of the two is considered in final assessment and 5 marks are earmarked for assignment.

ii. However for first year, there shall be 3 midterm examinations as in the above pattern and the average marks of the best two examinations secured in each subject shall be considered as final marks for **sessionals.**

iii. For practical subjects there shall be a continuous evaluation during the semester for 25 **internal** marks and 50 end examination marks. Out of the 25 marks for internal, day-to-day work in the laboratory shall be evaluated for 15 marks and internal examination for practical shall be evaluated for 10 marks conducted by the concerned laboratory teacher. The end examination shall be conducted by an external examiner and internal examiner being the laboratory teacher. The external examiner shall be appointed by the **Principal/Controller of** examinations.

iv. For the subject having design and / or drawing, (such as Engineering Graphics, Engineering Drawing, Machine Drawing) and estimation, the distribution shall be 25 marks for internal evaluation (15 marks for day-to-day work and 10 marks for internal tests) and 75 marks for end examination. There shall be two internal tests in a Semester and the better of the two shall be considered for the award of marks for internal tests. However in the I year class, there shall be three tests and the average of best two will be taken into consideration.

v. There shall be an industry-oriented mini-Project, in collaboration with an industry of their specialization, to be taken up during the vacation after III year II Semester examination. However, the mini project and its report shall be evaluated along with the project work in IV year II Semester. The industry oriented mini project shall be submitted in report form and should be presented before the committee, which shall be evaluated for 50 marks. The committee consists of an external examiner, head of the department, the supervisor of mini project and a senior faculty member of the department. There shall be no internal marks for industry oriented mini project.

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 and prepare a technical report, showing his understanding over the topic, and submit to the department, which shall be evaluated by the Departmental committee consisting of Head of the department, seminar supervisor and a senior faculty member. The seminar report shall be evaluated for 50 marks. There shall be no external examination for seminar.

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 (i) Head of the Department (ii) two Senior Faculty members of the Department. The Comprehensive Viva-Voce is aimed to assess the students' understanding in various subjects he / she studied during the B.Tech course of study. The Comprehensive Viva-Voce is evaluated for 100 marks by the Committee. There are no internal marks for the Comprehensive viva-voce.

viii. Out of a total of 200 marks for the project work, **50** marks shall be for Internal Evaluation and **150** marks for the End Semester Examination. The End Semester Examination (viva-voce) shall be conducted by the same committee appointed for industry oriented mini project. In addition the project supervisor shall also be included in the committee. The topics for industry oriented mini project, seminar and project work shall be different from each other. The evaluation of project work shall be conducted at the end of the IV year. The Internal Evaluation shall be on the basis of two seminars given by each student on the topic of his project.

ix. Laboratory marks and the sessional marks awarded by the **concerned teacher** are not final. They are subject to scrutiny and scaling by the **Principal/Controller of examinations** wherever necessary. In such cases, the sessional and laboratory marks awarded by the **concerned teacher** will be referred to a Committee. The Committee will arrive at a scaling factor and the marks will be scaled as per the scaling factor. The recommendations of the Committee are final and binding. The laboratory records and internal test papers shall be preserved in the respective **departments/exam branch** as per the University norms and shall be produced to the Committees of the University as and when the same is asked for.

6. Attendance Requirements:

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

ii. **Shortage of Attendance below 65% in aggregate shall in <u>NO</u> case be condoned**.

iii. Condonation of shortage of attendance in aggregate up to 10% (65% and above and below 75%) in each semester or I year may be granted by the College Academic Committee.

iv. A student will not be promoted to the next semester unless he satisfies the attendance requirement of the present semester / I year, as applicable. They may seek re-admission for that semester / I year when offered next.

v. Students whose shortage of attendance is not condoned in any semester / I year are not eligible to take their end examination of that class and their registration shall stand cancelled.

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

7. Minimum Academic Requirements:

The following academic requirements have to be satisfied in addition to the attendance requirements mentioned in item no.**6**

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% of marks in the end examination and a minimum of 40% of marks in the sum total of the internal evaluation and end examination taken together.

ii. A student shall be promoted from II to III year only if he fulfills the academic requirement **of 37**credits from one regular and one supplementary examinations of I year, and one regular examination of II year I semester irrespective of whether the candidate takes the examination or not. Or as stipulated by affiliating University from time to time.

iii. A student shall be promoted from third year to fourth year only if he fulfills the academic requirements of total **62 c**redits from the following examinations, whether the candidate takes the examinations or not. Or as stipulated by affiliating University from time to time.

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

iv. A student shall register and put up minimum attendance in all 200 credits and earn the 200 credits. Marks obtained in all 200 credits shall be considered for the calculation of percentage of marks.

v. 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 shall stand cancelled.

8. Course pattern:

i. The entire course of study is of four academic years. The first year shall be on yearly pattern and the second, third and fourth years on semester pattern.

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

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

9. Award of Class:

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

Class Awarded	% of marks to be secured	
First Class with Distinction	70% and above	From the aggregate marks secured for the best 200 Credits.
First Class	Below 70% but not less than 60%	
Second Class	Below 60% but not less than 50%	
Pass Class	Below 50% but not less than 40%	

(The marks in internal evaluation and end examination shall be shown separately in the marks memorandum)

10. Minimum Instruction Days:

The minimum instruction days for each semester / I year shall be 90/180 clear instruction days.

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

12. There shall be no place transfer within **the Group** Colleges

13. General:

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

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

iii. In the case of any doubt or ambiguity in the interpretation of the above rules, the decision of the Vice-Chancellor is final.

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

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Academic Regulations for B. Tech.

(Lateral Entry Scheme)

(Effective for the students getting admitted into II year from the Academic Year 2012-2013 and onwards)

1. The Students have to acquire 150 credits from II to IV year of B.Tech. Program (Regular) for the award of the degree.

Register for **150** credits and secure **150** credits.

2. Students, who fail to fulfil the requirement for the award of the degree in 6 consecutive academic years from the year of admission, shall forfeit their seat.

3. The same attendance regulations are to be adopted as that of B. Tech. (Regular).

4. Promotion Rule:

A student shall be promoted from third year to fourth year only if he fulfils the academic requirements of 37 **credits from the examinations.**

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

5. Award of Class:

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

First Class with Distinction	70% and above	From the aggregate marks secured for 150 Credits. (i.e. II year to IV year)
First Class	Below 70% but not less than 60%	
Second Class	Below 60% but not less than 50%	
Pass Class	Below 50% but not less than 40%	

(The marks in internal evaluation and end examination shall be shown separately in the marks memorandum)

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

MALPRACTICES RULES

DISCIPLINARY ACTION FOR / IMPROPER CONDUCT IN EXAMINATIONS

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

		cancelled.
3.	Impersonates any other candidate in connection with the examination.	The candidate who has impersonated shall be expelled from examination hall. The candidate is also debarred and forfeits the seat. The performance of the original candidate, who has been impersonated, shall be cancelled in all the subjects of the examination (including practical's 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 examinations. The continuation of the course by the candidate is subject to the academic regulations in connection with forfeiture of seat. If the imposter is an outsider, he will be handed over to the police and a case is registered against him.
4.	Smuggles in the Answer book or additional sheet or takes out or arranges to send out the question paper during the examination or answer book or additional sheet, during or after the examination.	Expulsion from the examination hall and cancellation of performance in that subject and all the other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester/year. The candidate is also debarred for two consecutive semesters from class work and all End examinations. The continuation of the course by the candidate is subject to the academic regulations in connection with forfeiture of seat.
5.	Uses objectionable, abusive or offensive language in the answer paper or in letters to the examiners or writes to the examiner requesting him to award pass marks.	Cancellation of the performance in that subject.
6.	Refuses to obey the orders of the Principal/Controller of examinations 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	In case of students of the college, they shall be expelled from examination halls and cancellation of their performance in that subject and all other subjects the candidate(s) has (have) already appeared and shall not be permitted to appear for the remaining examinations of the subjects of that semester/year. The candidates also are debarred and forfeit their seats. In case of outsiders, they will be handed over to the police and a police case is registered against them.

	to disrupt the orderly conduct of the examination.	
7.	Leaves the exam hall taking away answer script or intentionally tears of the script or any part thereof inside or outside the examination hall.	Expulsion from the examination hall and cancellation of performance in that subject and all the other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester/year. The candidate is also debarred for two consecutive semesters from class work and all End examinations. The continuation of the course by the candidate is subject to the academic regulations in connection with forfeiture of seat.
8.	Possess any lethal weapon or firearm in the examination hall.	Expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester/year. The candidate is also debarred and forfeits the seat.
9.	If student of the college, who is not a candidate for the particular examination or any person not connected with the college indulges in any malpractice or improper conduct mentioned in clause 6 to 8.	Student of the colleges 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 examinations.
12.	If any malpractice is detected which is not covered in the above clauses 1 to 11 shall be reported to the Principal/Controller of examination for further action to award suitable punishment.	

Malpractices identified by squad or special invigilators

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

MALLA REDDY ENGINEERING COLLEGE
(Autonomous)
B. TECH. COMPUTER SCIENCE AND ENGINEERING

I Year **COURSE STRUCTURE**

Code	Subject	L	T/P/D	C
EN1Y1101	English	2	1	4
MA1Y1102	Mathematics-I	3	1	6
MA1Y1103	Mathematical Methods	3	1	6
PH1Y1104	Engineering Physics	2	1	4
CH1Y1105	Engineering Chemistry	2	1	4
CS1Y1106	Computer Programming & Data Structures	3	--	6
ME1Y1107	Engineering Drawing	2	3	4
CS1Y1108	Computer Programming Lab	--	3	4
PCH1Y1109	Engineering Physics & Engineering Chemistry Lab	--	3	4
EN1Y1110	English Language Communication Skills Lab	--	3	4
MCS1Y1111	Engineering Workshop/IT Workshop	--	3	4
	Total	17	20	50

II Year **COURSE STRUCTURE** **I Semester**

Code	Subject	L	T/P/D	C
MR11U0M3	Probability and Statistics	3	1	3
MR11U501	Mathematical Foundations of Computer Science	3	1	3
MR11U502	Data Structures Through C++	4	1	4
MR11U451	Digital Logic Design	4	1	4
MR11U154	Environmental Studies	3	1	3
MR11U244	Basic Electrical and Electronic Engineering	4	-	4
MR11U245	Electrical and Electronics Lab	-	3	2
MR11U503	Data Structures Lab Through C++	-	3	2
	Total	21	11	25

II Year **COURSE STRUCTURE** **II Semester**

Code	Subject	L	T/P/D	C
MR11U504	Computer Organization	4	1	4
MR11U505	Data Base Management Systems	4	1	4
MR11U506	Object Oriented programming	4	-	4
MR11U507	Software Engineering	3	1	3
MR11U508	Formal Languages and Automata Theory	3	1	3
MR11U509	Design and Analysis of Algorithms	3	1	3
MR11U510	Object Oriented programming Lab	-	3	2
MR11U511	Data Base Management Systems Lab	-	3	2
	Total	21	11	25

III Year **COURSE STRUCTURE** **I Semester**

Code	Subject	L	T/P/D	C
MR11U512	Principles of Programming Languages	4	1	4
MR11U0M5 MR11U606 MR11U513	**OPEN ELECTIVE:** Operations Research Intellectual Property Rights and Cyber Law Computer Forensics	3	1	3
MR11UB01	Managerial Economics and Financial Analysis	4	1	4
MR11U453	Microprocessors & Interfacing	3	1	3
MR11U514	Operating Systems	4	-	4
MR11U515	Data Communications & Computer Networks	3	1	3
MR11U454	Microprocessors & Interfacing Lab	-	3	2
MR11U516	Computer Networks & Operating Systems Lab	-	3	2
	Total	21	11	25

III Year **COURSE STRUCTURE** **II Semester**

Code	Subject	L	T/P/D	C
MR11U517	Object Oriented Analysis and Design	4	1	4
MR11U518	Software Testing Methodologies	4	1	4
MR11U519	Network Security	3	1	3
MR11U520	Compiler Design	4	1	4
MR11U605	Web Technologies	3	1	3
MR11UB02	Management Science	3	-	3
MR11U0E1	Advanced English Communication Skills Lab	-	3	2
MR11U521	Web Technologies & Compiler Design lab	-	3	2
	Total	21	11	25

IV Year **COURSE STRUCTURE** **I Semester**

Code	Subject	L	T/P/D	C
MR11U522	Linux programming	4	1	4
MR11U523	Mobile Computing	4	1	4
MR11U524	Data Warehousing and Data Mining	4	-	4
MR11U525	Computer Graphics	3	1	3
MR11U526 MR11U527 MR11U528 MR11U423	**ELECTIVE –I :** Advanced Computer Architecture Cloud computing Distributed Computing VLSI Design	3	1	3
MR11U617 MR11U529 MR11U530 MR11U531	**ELECTIVE – II :** Design Patterns Machine Learning Soft Computing Information Retrieval Systems	3	1	3
MR11U532	Linux Programming & Data Mining lab	-	3	2
MR11U533	Case Tools and Software Testing Lab	-	3	2
	Total	21	11	25

IV Year **COURSE STRUCTURE** **II Semester**

Code	Subject	L	T/P/D	C
MR11U534	Software Project Management	3	-	3
MR11U535 MR11U536 MR11U537 MR11U613	**ELECTIVE III:** Web Services Semantic Web & Social Networks Scripting Languages Multimedia & Rich Internet Applications	3	1	3
MR11U538 MR11U539 MR11U540 MR11U450	**ELECTIVE IV:** Adhoc & Sensors Networks Storage Area Networks Database Security Embedded Systems	3	1	3
MR11U541	Industry Oriented Mini Project	-	-	2
MR11U542	Seminar	-	6	2
MR11U543	Project Work	-	15	10
MR11U544	Comprehensive Viva	-	-	2
	Total	9	23	25

Note: All End Examinations (Theory and Practical) are of three hours duration.
T – Theory P – Practical C – Credits

2011-2012 Code: MR11U0M3

MALLA REDDY ENGINEERING COLLEGE
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II Year B.Tech CSE-I Sem	L	T/P/D	C
	3	1/-/-	3

PROBABILITY AND STATISTICS

UNIT-I: Probability:
Sample space and events – Probability – The axioms of probability – Addition, Multiplication theorems - Conditional probability – Baye's theorem. And problems.

UNIT-II: Random variables:
Discrete and continuous – Distribution – Distribution function, expectation and covariance
Distribution - Binomial, Negative Binomial, Poisson, Uniform, Normal, exponential , geometric, Beta and Gamma distributions – related properties and computation of Mean and variance, Central limit theorem (without proof).

UNIT-III: Sampling distribution: [large sampe tests]
Definition ofPopulation and sample - Sampling distributions of mean (known and unknown) proportions, sums and differences.
Estimation: Point estimation – interval estimation - Bayesian estimation.

UNIT-IV: Test of Hypothesis:[sample tests]
Means and proportions – Hypothesis concerning one and two means – Type I and Type II errors. One tail, two-tail tests calculation of P-Value .Tests of significance – Student's t-test, F-test, Z test.,χ^2 goodness of fit .

UNIT-V: Curve fitting:
The method of least squares –Straight line, parabola, goodness of fit,power curve,exponential curve. Inferences based on the least squares estimations –

UNIT- VI: Correlation and Regression:
Coefficient of correlation –Regression Coefficient – the lines of regression – the rank correlation Curvilinear regression,multiple regressions for three variables– correlation for bivariate distributions.

UNIT-VII: Queuing Theory:
Introduction to queueing problem,poisson process, Arrival and departure distributions- Pure Birth and Death Process M/M/1 Model and Simple Problems.

UNIT-VIII: Stochastic Process:
Introduction to stochastic process- Markov process classification of states – Examples of Markov Chains, Stochastic matrix, limiting probabilities.

TEXT BOOKS:

1. Probability and statistics for engineers (Erwin Miller And John E.Freund), R A Johnson And C.B.Gupta.. 7th edition, Pearson Education / PHI.
2. Introduction to Probability and Statistics, 12th edition, W.Mendenhall, R.J.Beaver and B.M.Beaver, Thomson. (Indian edition).
3. Mathematical statistics by VK Kapoor & Guptha
4. OR by Manmohan & VK Kapoor & Guptha
5. Probability & Statistics by E Rukmangadachari, Pearson Edition

REFERENCE BOOKS*:*

1. Text book of Probability and Statistics Dr.Shahnaz Bathul, V.G.S.Publishers 2003.
2. Probability and Statistics in Engineering, 4th Edition, WilliamW.Hines, Douglas C.Montgomery, David M.Goldsman, Connie M.Borror, Wiley Student Edition.
3. Probability, Statistics and Queuing Theory, 2nd Edition, Trivedi, John Wiley and Sons
4. Introduction to Probability and Statistics, J.S.Milton, Jesse C.Arnold, 4th edition,TMH.
5. Probability,Statistics and Random Processes,Dr.K.Muruges P.Guruswamy,Anuradha Agencies, Deepti Publications.

2011-2012 Code: MR11U501

MALLA REDDY ENGINEERING COLLEGE

(*Autonomous)*

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

MATHEMATICAL FOUNDATIONS OF COMPUTER SCIENCE

UNIT-I

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

UNIT-II

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

UNIT-III

Set Theory: Properties of binary Relations, equivalence, compatibility and partial ordering relations, Hasse diagram. Functions: Inverse Function Composition of functions, recursive Functions, Lattice and its Properties.

UNIT-IV

Algebraic structures: Algebraic systems Examples and general properties, Semi groups and monads, groups sub groups' homomorphism, Isomorphism.

UNIT-V

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

UNIT-VI

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

UNIT-VII

Graph Theory: Representation of Graph, DFS, BFS, Spanning Trees, and planar Graphs

UNIT-VIII

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, Third Edition,Tata McGraw Hill.
2. Discrete Mathematics for Computer Scientists & Mathematicians, J.L. Mott, A. Kandel, T.P. Baker Prentice Hall.

REFERENCE BOOKS*:*

1. Discrete and Combinational Mathematics- An Applied Introduction-5th Edition – Ralph. P.Grimaldi.Pearson Education
2. Discrete Mathematics with Applications, Thomas Koshy, Elsevier
3. Discrete Mathematics and its Applications, Kenneth H. Rosen, Fifth Edition.TMH.
4. Discrete Mathematical structures Theory and application-Malik & Sen,Cengage.
5. Discrete Mathematics for Computer science, Garry Haggard and others, Thomson.
6. Logic and Discrete Mathematics, Grass Man & Trembley, Pearson Education.

2011-2012 Code: MR11U502

MALLA REDDY ENGINEERING COLLEGE
(*Autonomous)*

II Year B.Tech CSE-I Sem	L	T/P/D	C
	4	1/- / -	4

DATA STRUCTURES THROUGH C++

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, streams I/O.

UNIT- III:
Algorithms, performance analysis- time complexity and space complexity. Review of basic data structures- The list ADT, Stack ADT, Queue ADT, Implementation using template classes in C++.Trees-Basic Terminology, Binary tree ADT,array and linked representations, traversals, threaded binary trees.

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.

UNIT -V:
Priority Queues – Definition, ADT, Realizing a Priority Queue using Heaps, Definition, insertion, Deletion, Heap Sort, External Sorting- Model for external sorting, Multiway merge, Polyphase merge.

UNIT -VI:
Search Trees (**Part-I**):-
Binary Search Trees, Definition, ADT, Implementation, Operations- Searching, Insertion and Deletion, AVL Trees, Definition, Operations – Insertion, Deletion and Searching

UNIT -VII:
Search trees (part-II): B-Trees, Definition, B-Tree of order m, insertion, deletion and searching, Comparison of Search Trees. Graphs-Basic Terminology, representations of graphs, Graph search Methods-DFS, BFS.

UNIT- VIII:
Pattern matching and Tries: Pattern matching algorithms-Brute force, the Knuth-Morris-Pratt algorithm, Standard Tries, Compressed Tries, and Suffix tries.

TEXT BOOKS:

1. Data structures, Algorithms and Applications in C++, S.Sahni, University Press (India) Pvt.Ltd, 2nd edition, Universities Press Orient Longman Pvt. Ltd.
2. Data structures and Algorithms in C++, Michael T.Goodrich, R.Tamassia and .Mount, Wiley student edition, John Wiley and Sons.

REFERENCE BOOKS*:*

1. Data structures and Algorithm Analysis in C++, Mark Allen Weiss, Pearson Education. Ltd., Second Edition.
2. Data structures and algorithms in C++, 3rd Edition, Adam Drozdek, Cengage learning.
3. Data structures using C and C++, Langsam, Augenstein and Tanenbaum, PHI.
4. Problem solving with C++, The OOP, Fourth edition, W.Savitch, Pearson education.
5. Advanced Data Structures & Algorithms in C++,V.V.Muniswamy,Jaico Publishing House.

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DIGITAL LOGIC DESIGN

UNIT-I

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

UNIT-II

Boolean Algebra And Logic Gates : Basic Definitions, Axiomatic definition of Boolean Algebra, Basic theorems and properties of Boolean algebra, Boolean functions canonical and standard forms, other logic operations, Digital logic gages, integrated circuits.

UNIT-III

Gate–Level Minimization: The map method, Four-variable map, Five-Variable map, product of sums simplification Don't-care conditions, NAND and NOR implementation other Two-level implementations, Exclusive – Or function, Hardware Description language (HDL).

UNIT - IV

Combinational Logic : Combinational Circuits, Analysis procedure Design procedure, Binary Adder-Subtractor Decimal Adder, Binary multiplier, magnitude comparator, Decoders, Encoders, Multiplexers, HDL for combinational circuits.

UNIT - V

Synchronous Sequential Logic: Sequential circuits, latches, Flip-Flops Analysis of clocked sequential circuits, HDL for sequential circuits, State Reduction and Assignment, Design Procedure**.**

UNIT – VI

Registers: shift Registers, Ripple counters synchronous counters, other counters, HDL for Registers and counters.

UNIT - VII

Memory System: Introduction, Random-Access Memory, Memory Decoding, Error Detection and correction Read-only memory, Programmable logic Array programmable Array logic, Sequential Programmable Devices.

UNIT-VIII

Asynchronous Sequential Logic : Introduction, Analysis Procedure, Circuits with Latches, Design Procedure, Reduction of state and Flow Tables, Race-Free state Assignment Hazards, Design Example.

TEXT BOOKS:

1. Digital Design – Third Edition, M.Morris Mano, Pearson Education/PHI.
2. Fundamentals of Logic Design, Roth, 5th Edition, Thomson.

REFERENCE BOOKS*:*

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

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ENVIRONMENTAL STUDIES

UNIT-I : Ecosystems : Definition, Scope and importance of ecosystem, Concept of ecosystem. Classification of Structure and Structural of an ecosystem. Functions of an ecosystem, Producers, consumers and decomposers. - Energy flow in the ecosystem - Ecological succession. Food chains, food webs and ecological pyramids. Flow of energy, Biogeochemical cycles, Homeostasis/Cybernetics, Food chain concentration, Biomagnifications, ecosystem value, services and carrying capacity.

UNIT-II : Natural Resources : Classification of resources, Living and Non-Living resources, Renewable and non-renewable resources. Water resources – Use and over utilization of surface and ground water – Floods, drought, conflicts over water, dams – benefits and problems - Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies. Energy resources: Growing energy needs, renewable and non-renewable energy sources use of alternate energy sources, case studies. Land resources: Land as a resource, land degradation, man induced landslides and land use/lanbd cover mapping.

UNIT-III: Biodiversity and its conservation: Introduction - Definition: genetic, species and ecosystem diversity. Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and intrinsic. Hot-sports of biodiversity - Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts. Conservation of biodiversity: In-Situ and Ex-situ conservation. Food and fodder resources, Timber and non timber forest products.

UNIT IV: Environmental Pollution and Control: Classification of pollution and pollutants, causes, effects and control technologies. Air Pollution: Primary and secondary pollutants, Automobile and Industrial pollution, Ambient air quality standards. Water pollution: Point and non-point sources of pollution, major pollutant of water and their sources, drinking water quality standards, waste water treatment plants (STP) , common and combined effluent treatment plants(CETP). Soil Pollution: soil as sink for pollutants, Impact of modern agriculture on soil, degradation of soil. Marine pollution: Misuse of International water for dumping of hazardous waste, coastal pollution due to sewage and marine disposal of industrial effluents. Noise pollution: Sources, Industrial Noise- Occupational Health hazards, standards, Methods of control of noise. Thermal pollution: Thermal comforts, heat island effect, Radiation effects. Nuclear pollution: Nuclear power plants, nuclear radiation, disasters and impacts, genetical disorders. Solid waste: types, collection processing and disposal of industrial and municipal solid wastes composition and characteristics of e- waste and its management.

UNIT V: Global Environmental Problems and Global Efforts: Green house effect, green house gases(GHG), global warming, sea level rise, climate change and their impacts on human environment. Ozone depletion and ozone depleting substances(ODS). Deforestation and desertification. International conventions/ Protocols: Earth summit , Kyoto Protocol and Montreal Protocol.

UNIT VI : Environmental Impact assessment (EIA) and Environment management plan: Definition of impact: classification of impacts, positive and negative, reversible and irreversible, light, moderate and severe, methods of baseline data acquisition. Impacts on different components such as human health resoureces, air, water, flora, fauna and society. Prediction of impacts and impact assessments methodologies. Environmental Impact Statement(EIS). Environmental Management Plan(EMP), Technological Solutions, Preventive Methods, Control Technologies, Treatment Technologies:Green-Belt-Development, Rain Water Harvesting, Remote Sensing and GIS Methods.

UNIT VII : Environmental Policy Legislation, Rules and Regulations: National Environmental policy, Environmental protection act,legal aspects air (prevention and control of pollution) Act-1981,water (prevention and control of pollution) Act-1974, water pollution Cess Act 1977,Forest Conservation Act, Muncipal Solid waste management and handling rules,bio medical management and handling rules, hazardous waste management and handling rules.

UNIT VIII: Towards Sustainable Future
Concepts of sustainable development, threats to sustainability, population and its explosion, crazy consumerism, over exploitation of resources, strategies for achieving sustainable development, environmental education, conservation of resources, urban, sprawl , sustainable cities, sustainable CommUNITies, human health, Role of IT in environment, environmental ethics, environmental economics, concepts of green building, Clean Development Mechanism(CDM)

TEXT BOOKS:

1 Environmental Studies, From crisis to cure by R. Rajagopalan, Oxford University Press.
2 Textbook of Environmental Studies for Undergraduate Courses by Erach Bharucha for University Grants Commission.
3 Textbook of Environmental Sciences and Technology by M. Anji Reddy, BS Publication.

REFERENCE BOOKS*:*

1. Environmental Science-towards a sustainable future by Richard T. Wright 2008 PHL Learning Pvt Ltd New Delhi
2. Environmental Engineering and Science by Gilbert M Masters and Wendell P.Ela 2008 PHL Learning Pvt Ltd New Delhi

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BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

UNIT – I

Introduction to Electrical Engineering: Electric field; electric current, potential and potential difference, electromotive force, electric power, ohm's law, basic circuit components, electromagnetism related laws, Magnetic field due to electric current flow, force on a current carrying conductor placed in a magnetic field, Faradays laws of electromagnetic induction. Types of induced EMF's, Kirchhoff's laws, Simple problems.

UNIT- II

Network Analysis : Basic definitions, types of elements , types of sources, resistive networks, inductive networks, capacitive networks, series parallel circuits, star delta and delta star transformation , Network theorems- Superposition , Thevenins's, Nortons & Maximum power transfer theorems and simple problems.

UNIT-III

Magnetic Circuits: Basic definitions, analogy between electric and magnetic circuits.

Transformers: Principles of operation, Constructional Details, EMF equation, simple problems.

UNIT-IV

Direct current machines: Principle of operation of dc machines, armature windings, e.m.f equation in a dc machine, Torque production in a dc machine, Operation of a dc machine as a generator, operation of a dc machine as a motor.

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

UNIT-V

Junction Diode Characteristics: Open- circuited p-n junction, The p-n junction Energy band diagram of PN diode, PN diode as a rectifier (forward bias and reverse bias), The current components in p-n diode, Law of junction, Diode equation, Volt-ampere characteristics of p-n diode, Temperature dependence of VI characteristic, Transition and Diffusion capacitances, Step graded junction, Breakdown Mechanisms in Semi Conductor (Avalanche and Zener breakdown) Diodes, Zener diode characteristics, Characteristics of Tunnel Diode with the help of energy band diagrams, Varactar Diode, LED, LCD.

UNIT-VI

Transistor And Fet Characteristics: Junction transistor, Transistor current components, Transistor as an amplifier, Transistor alpha, Input and Output characteristics of transistor in Common Base, Common Emitter, and Common collector configurations, Relation between Alpha and Beta, typical transistor junction voltage values, JFET characteristics (Qualitative and Quantitative discussion), Small signal model of JFET, MOSFET characteristics (Enhancement and depletion mode), Symbols of MOSFET, Comparison of Transistors, Introduction to SCR and UJT.

UNIT-VII

Amplifiers : Small signal low frequency transistor amplifier circuits: h-parameter representation of a transistor, Analysis of single stage transistor amplifier using h-parameters. Comparison of transistor configurations in terms of A_I , R_i , A_V , R_O. Feedback amplifiers concepts : Feedback Amplifier types; block diagram approach, simple relations (qualitative treatment).

UNIT-VIII

Oscillators: Condition for oscillations. RC-phase shift oscillators with Transistor and FET, Hartley and Colpitts oscillators, Wein bridge oscillator, RC, BJT & FET oscillators. Fundamentals of feedback amplifiers and types - RC, Colpih, Hartley oscillators, stability of oscillators.

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

REFERENCE BOOKS*:*

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. Electronic Devices and Circuits – T.F. Bogart Jr., J.S.Beasley and G.Rico, Pearson Education, 6th edition, 2004.
5. Principles of Electronic Circuits – S.G.Burns and P.R.Bond, Galgotia

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ELECTRICAL AND ELECTRONICS LAB

PART - A

1. Verification of Superposition and Reciprocity theorems.
2. Verification of maximum power transfer theorem. Verification on DC, verification on AC with Resistive and Reactive loads.
3. Experimental determination of Thevenin's
4. Magnetization characteristics of D.C. Shunt generator.
5. Swinburne's Test on DC shunt machine (Predetermination of efficiency of a given DC Shunt machine working as motor and generator).
6. Brake test on DC shunt motor. Determination of performance Characteristics.
7. OC & SC tests on Single-phase transformer (Predetermination of efficiency and regulation at given power factors and determination of equivalent circuit).
8. Brake test on 3-phase Induction motor (performance characteristics).

PART - B

1. PN Junction Diode Characteristics (Forward bias, Reverse bias)
2. Zener Diode Characteristics
3. Transistor CE Characteristics (Input and Output)
4. Rectifier without Filters (Full wave & half wave)
5. Rectifier with Filters (Full wave & half wave)

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DATA STRUCTURES LAB THROUGH C++

Objectives:

- To make the student learn an object oriented way of solving problems.
- To make the student write ADTS for all data structures.

Recommended Systems/Software Requirements:

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

Week1:
C++ programs to implement the following using an array. **a)**Stack ADT b) Queue ADT

Week2:
Write C++ programs to implement the following using a singly linked list.
a) Stack ADT b) Queue ADT

Week3:
Write C++ programs to implement the deque (double ended queue) ADT using a doubly linked list and an array.

Week 4:
Write a C++ program to perform the following operations:
a) Insert an element into a binary search tree. b) Delete an element from a binary search tree.
c) Search for a key element in a binary search tree.

Week5:
Write C++ programs that use recursive functions to traverse the given binary tree in
a)Preorder b) inorder and c) postorder.

Week6:
Write C++ programs that use non-recursive functions to traverse the given binary tree in
a) Preorder b) inorder and c) postorder.

Week7:
Write C++ programs for the implementation of bfs and dfs for a given graph.

Week8 :
Write C++ programs for implementing the following sorting methods:
a) Merge sort b) Heap sort

Week9:
Write a C++ program to perform the following operations a) Insertion into a B-tree b) Deletion from a B-tree

Week10 :
Write a C++ program to perform the following operations a) Insertion into an AVL-tree b) Deletion from an AVL-tree

Week11 :
Write a C++ program to implement all the functions of a dictionary (ADT) using hashing.

Week12 :
Write a C++ program for implementing Knuth-Morris- Pratt pattern matching algorithm.

(Note: Use Class Templates in the above Programs)

TEXT BOOKS :

1. Data StructuresA Pseudocode Approach with C++,Indian edition,R.F.Gilberg and B.A.Forouzan,Cengage Learning.
2. Data Structures and Algorithms in C++, Third Edition, Adam Drozdek, Thomson.
3. Programming Principles and Practice using C++,B.Stroustrup,Addison-Wesley (Pearson education).
4. C++ for Programmers,P.J.Deitel and H.M.Dietel , PHI / Pearson.

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COMPUTER ORGANIZATION

UNIT -I :
Basic Structure Of Computers: Computer Types, Functional UNIT, Basic OPERATIONAL concepts, Bus structures, Software, Performance, multiprocessors and multi computers. Data Representation. Fixed Point Representation. Floating – Point Representation. Error Detection codes.

UNIT -II :
Register Transfer Language And Micro operations: Register Transfer language.Register Transfer Bus and memory transfers, Arithmetic Mircrooperatiaons, logic micro operations, shift micro operations, Arithmetic logic shift UNIT. Instruction codes. Computer Registers Computer instructions– Instruction cycle.
Memory – Reference Instructions. Input – Output and Interrupt. STACK organization. Instruction formats. Addressing modes. DATA Transfer and manipulation. Program control. Reduced Instruction set computer.

UNIT -III :
Micro Programmed Control: Control memory, Address sequencing, microprogram example, design of control UNIT hard wired control. Microprogrammed control

UNIT- IV :
Computer Arithmetic: Addition and subtraction, multiplication Algorithms, Division Algorithms, Floating – point Arithmetic operations. Decimal Arithmetic UNIT Decimal Arithmetic operations.

UNIT- V :
The Memory System: Basic concepts semiconductor RAM memories. Read-only memories Cache memories performance considerations, Virtual memories secondary storage. Introduction to RAID.

UNIT-VI
Input-Output Organization: Peripheral Devices, Input-Output Interface, Asynchronous data transfer Modes of Transfer, Priority Interrupt Direct memory Access, Input –Output Processor (IOP) Serial communication; Introduction to peripheral component, Interconnect (PCI) bus. Introduction to standard serial communication protocols like RS232, USB, IEEE1394.

UNIT -VII:
Pipeline And Vector Processing: Parallel Processing, Pipelining, Arithmetic Pipeline, Instruction Pipeline, RISC Pipeline Vector Processing, Array Processors.

UNIT -VIII :
Multi Processors: Characteristics or Multiprocessors, Interconnection Structures, Interprocessor Arbitration. InterProcessor Communication and Synchronization Cache Coherance. Shared Memory Multiprocessors.

TEXT BOOKS :

1. Computer Organization – Carl Hamacher, Zvonks Vranesic, SafeaZaky, Vth Edition, McGraw Hill.
2. Computer Systems Architecture – M.Moris Mano, IIIrd Edition, Pearson/PHI

REFERENCE BOOKS*:*

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

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DATA BASE MANAGEMENT SYSTEMS

UNIT -I:
Data base System Applications, data base System VS file System – View of Data – Data Abstraction –Instances and Schemas – data Models – the ER Model – Relational Model – Other Models – Database Languages – DDL – DML – database Access for applications Programs – data base Users and Administrator – Transaction Management – data base System Structure – Storage Manager – the Query Processor

UNIT- II:
History of Data base Systems. Data base design and ER diagrams – Beyond ER Design Entities, Attributes and Entity sets – Relationships and Relationship sets – Additional features of ER Model – Concept Design with the ER Model – Conceptual Design for Large enterprises.

UNIT- III :
Introduction to the Relational Model – Integrity Constraint Over relations – Enforcing Integrity constraints – Querying relational data – Logical data base Design – Introduction to Views – Destroying /altering Tables and Views.
Relational Algebra – Selection and projection set operations – renaming – Joins – Division – Examples of Algebra overviews – Relational calculus – Tuple relational Calculus – Domain relational calculus – Expressive Power of Algebra and calculus.

UNIT- IV :
Form of Basic SQL Query – Examples of Basic SQL Queries – Introduction to Nested Queries – Correlated Nested Queries Set – Comparison Operators – Aggregative Operators – NULL values – Comparison using Null values – Logical connectivity's – AND, OR and NOT – Impact on SQL Constructs – Outer Joins – Disallowing NULL values – Complex Integrity Constraints in SQL Triggers and Active Data bases.

UNIT- V :
Schema refinement – Problems Caused by redundancy – Decompositions – Problem related to decomposition – reasoning about FDS – FIRST, SECOND, THIRD Normal forms – BCNF – Lossless join Decomposition – Dependency preserving Decomposition – Schema refinement in Data base Design – Multi valued Dependencies – FORTH Normal Form.

UNIT- VI :
Transaction Concept- Transaction State- Implementation of Atomicity and Durability – Concurrent – Executions – Serializability- Recoverability – Implementation of Isolation – Testing for serializability- Lock –Based Protocols – Timestamp Based Protocols- Validation-Based Protocols – Multiple Granularity.

UNIT -VII :
Recovery and Atomicity – Log – Based Recovery – Recovery with Concurrent Transactions – Buffer Management – Failure with loss of nonvolatile storage-Advance Recovery systems-Remote Backup systems.

UNIT- VIII :
Data on External Storage – File Organization and Indexing – Cluster Indexes, Primary and Secondary Indexes – Index data Structures – Hash Based Indexing – Tree base Indexing – Comparison of File Organizations – Indexes and Performance Tuning- Intuitions for tree Indexes – Indexed Sequential Access Methods (ISAM) – B+ Trees: A Dynamic Index Structure.

TEXT BOOKS:

1. Data base Management Systems, Raghurama Krishnan, Johannes Gehrke, and TATA McGrawHill 3rd Edition
2. Data base System Concepts, Silberschatz, Korth, McGraw hill, V edition.

REFERENCE BOOKS*:*

1. Data base Systems design, Implementation, and Management, Peter Rob & Carlos Coronel 7th Edition.
2. Fundamentals of Database Systems, Elmasri Navrate Pearson Education
3. Introduction to Database Systems, C.J.Date Pearson Education
4. Oracle for professionals,The X Team,S.Shah and V.Shah,SPD.

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OBJECT ORIENTED PROGRAMMING

UNIT- I
Object oriented thinking: Need for oop paradigm, A way of viewing world – Agents, responsibility, messages, methods, classes and instances, class hierarchies(Inheritance), method binding, overriding and exceptions, summary of OOP concepts, copying with complexity, abstraction mechanism.

UNIT- II
Java Basics: History of Java, Java Buzzwords, data types, variables, scope and life time of variables, arrays, operators, expressions, control statements, type conversion and casting, simple java program, concepts of classes, objects, constructors, methods, access control, this keyword, garbage collection, overloading methods and constructors, parameter passing, recursion, nested and inner classes, exploring String class and String Buffer class. String handling,

UNIT- III
Inheritance: Hierarchical abstractions, Base class object, subclass, subtype, substitutability, forms of inheritance- specialization, specification, construction, extension, limitation, combination, benefits of inheritance, costs of inheritance. Member access rules, super uses, using final with inheritance, Polymorphism, method overriding, abstract classes, the object class

UNIT- IV
Packages and Interfaces: 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.
Exploring java.io package: Java I/O classes and Interfaces, Files, Stream and Byte classes, Character Streams, Serialization.

UNIT- V
Exception Handling: Concepts of exception handling, benefits of exception handling, Termination or resumptive models, exception hierarchy, usage of try, catch, throw, throws, finally, built in exceptions, creating own exception sub classes..
Exploring java.util Package: Collections overview, Collection interfaces and classes, Iterators, RandomAccess interface, Maps, Comparators, Arrays, Legacy classe and interfaces, BitSet, Date, Calendar, Observable, Timer.

UNIT- VI
Multithreading: Differences between multi threading and multitasking, thread life cycle, creating threads, thread priorities, synchronizing threads, inter thread communication, thread groups, daemon threads.
Enumerations, autoboxing, annotations, generics.

UNIT- VII

Event Handling: Events, Events sources, Event classes, Event Listeners, Delegation event model, handling mouse and keyboard events, Adapter classes. The AWT class hierarchy, user interface components- labels, button, canavas, scrollbars, text components, check box, check box group, choices, lists panels- scroll pane, dialogs, menu bar, graphics, layout managerlayout manager types- border, grid, flow, card and grid bag.

UNIT- VIII

Applets: Concepts of Applets, difference between applets and applications, life cycle of an applet, types of applet, types of applets, creating applets. Passing parameters to applets.

Swing: Introduction, limitations of AWT, MVC architecture, components, containers, exploring swing- JApplet, JFrame and JComponent, Icons and Labels, text fields, buttons- The JButton class, Check boxes, Radio buttons, Combo boxes, Tabbed Panes, Scroll Panes, Trees, and Tables

TEXT BOOKS:

1. Java; the complete reference, 7th editon, Herbert schildt, TMH.
2. Understanding OOP with Java, updated edition, T. Budd, pearson eduction.

REFERENCE BOOKS*:*

1. An Introduction to programming and OO design using Java, J.Nino and F.A. Hosch, John wiley & sons.
2. An Introduction to OOP, second edition, T. Budd, pearson education.
3. Introduction to Java programming 6th edition, Y. Daniel Liang, pearson education.
4. An introduction to Java programming and object oriented application development, R.A. Johnson- Thomson.
5. Core Java 2, Vol 1, Fundamentals, Cay.S.Horstmann and Gary Cornell, seventh Edition, Pearson Education.
6. Core Java 2, Vol 2, Advanced Features, Cay.S.Horstmann and Gary Cornell, Seventh Edition, Pearson Education
7. Object Oriented Programming through Java, P. Radha Krishna, University Press.

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SOFTWARE ENGINEERING

UNIT- I:

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

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

UNIT- II:

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

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

UNIT- III:

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

System models: Context Models, Behavioural models, Data models, Object models, structured methods.

UNIT- IV:

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

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

UNIT- V:

Modelling Component-level design: Designing class based components, Conducting component-level design, Object constraint language, designing conventional components.

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

UNIT- VI:

Testing Strategies: A strategic approach to software testing, test strategies for conventional software, Black-Box and White-Box testing, Validation testing, System testing, the art of Debugging.

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

UNIT -VII:

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

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

UNIT- VIII:

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

TEXT BOOKS:

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

REFERENCE BOOKS*:*

1. Software Engineering- K.K. Agarwal & Yogesh Singh, New Age International Publishers
2. Software Engineering, an Engineering approach- James F. Peters, Witold Pedrycz, John Wiely.g Buffer
3. Systems Analysis and Design- Shely Cashman Rosenblatt,Thomson Publications.
4. Software Engineering principles and practice,Hans Van Vliet,3rd edition,John Wiley & Sons Ltd.
5. Software Engineering:A Primer, Waman S Jawadekar, The McGraw-Hill Companies.
6. Introduction to Software Engineering,R.J.Leach,CRC Press.

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FORMAL LANGUAGES AND AUTOMATA THEORY

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

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

UNIT I :

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

UNIT II :

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

UNIT III :

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).

UNIT IV :

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

UNIT V :

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

UNIT VI :

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

UNIT VII :

Turing Machine : 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 VIII

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

TEXT BOOKS :

1. "Introduction to AutomataTheory Languages and Computation"Hopcroft H.E. and Ullman J.D.Pearson Education
2. Introduction to Theory of Computation –Sipser 2nd edition Thomson

REFERENCE BOOKS*:*

1. Introduction to Computer Theory, Daniel I.A. Cohen, John Wiley.
2. Introduction to languages and the Theory of Computation ,John C Martin, TMH
3. "Elements of Theory of Computation", Lewis H.P. & Papadimition C.H. Pearson /PHI.
4 Theory of Computer Science – Automata languages and computation -Mishra and Chandrashekaran, 2nd edition, PHI

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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 and Little oh notation,Probabilistic analysis, Amortized analysis.

UNIT II :

Disjoint Sets- disjoint set operations, union and find algorithms, spanning trees, connected components and biconnected components.

UNIT III :

Divide and conquer: General method , applications-Binary search, Quick sort, Merge sort, Strassen's matrix multiplication.

UNIT IV :

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

UNIT V :

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

UNIT VI :

Backtracking: General method, applications-n-queen problem, sum of subsets problem, graph coloring, Hamiltonian cycles.

UNIT VII :

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

UNIT VIII :

NP-Hard and NP-Complete problems: Basic concepts, non deterministic algorithms, NP - Hard and NPComplete classes, Cook's theorem.

TEXT BOOKS :

1. Fundamentals of Computer Algorithms, Ellis Horowitz,Satraj Sahni and Rajasekharam,Galgotia publications pvt. Ltd.
2. Algorithm Design: Foundations, Analysis and Internet examples, M.T.Goodrich and R.Tomassia,John wiley and sons.
3. Design and Analysis of algorithms-Parag Himanshu Dave,Himanshu Balchandra Dave Publisher:Pearson.

REFERENCE BOOKS*:*

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

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OBJECT ORIENTED PROGRAMMING LAB

Objectives:

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

Recommended Systems/Software Requirements:

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

Week1 :

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

b) The Fibonacci sequence is defined by the following rule:
The fist 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 inter thread communication.

Week 10 :

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

Week 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 24eparated by commas. Write a java program to display the table using Jtable component.

TEXT BOOKS :

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

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DATA BASE MANAGEMENT SYSTEMS LAB

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 travel". Students are expected to use "Mysql" 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.
Example: **Entities:**

1. BUS
2. Ticket
3. Passenger

Relationships:

1. Reservation
2. Cancellation

PRIMARY KEY ATTRIBUTES:

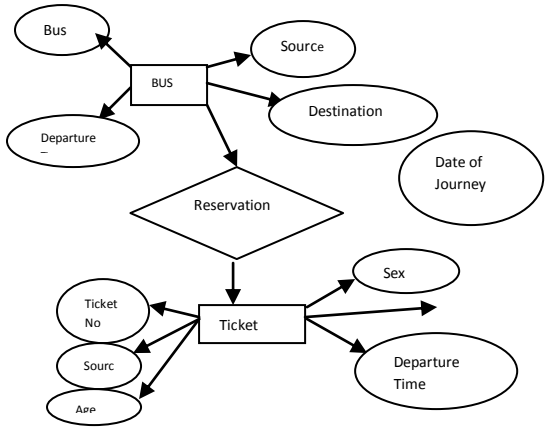
1. Ticket ID (Ticket Entity)
2. Passport ID (Passenger Entity)
3. Bus_NO (Bus Entity)

Apart from the above mentioned entities you can identify more. The above mentioned are few.
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.

Passport ID	**Ticket_id**

Example: E-r diagram for bus



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.

Example: E-r diagram for bus

Example: The passenger tables look as below. This is an example. You can add more attributes based on your E-R model. This is not a normalized table.

Passenger

Name	Age	Sex	Address	Passport ID

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.

For the above table in the First normalization we can remove the multi valued attribute. Ticket_id and place it in another table along with the primary key of passenger.

First Normal Form: The above table can be divided into two tables as shown below.

Passenger

Name	Age	Sex	Address	Passport ID

You can do the second and third normal forms if required. Any how Normalized tables are given at the end.

Experiment 5: Installation of Mysql and practicing DDL commands

Installation of MySql. In this week you will learn Creating databases, How to create tables, altering the database, dropping tables and databases If not required. You will also try truncate, rename commands etc.

Example for creation of a normalized "Passenger" table.

```
CREATE TABLE Passenger (
   Passport_id          INTEGER   PRIMARY KEY,
   Name    VARCHAR (50) Not NULL,
   Age     Integer Not NULL,
   Sex   Char,
   Address VARCHAR (50) Not NULL);
```

Similarly create all other tables.

Note: Detailed creation of tables is given at the end.

Experiment 6: Practicing DML commands

DML commands are used to for managing data within schema objects. Some examples:

- SELECT- retrieve data from the a database
- INSERT- insert data into a table
- UPDATE- updates existing data within a table
- DELETE- deletes all records from a table, the space for the records remain

Inserting values into Bus table:

```
Insert into Bus values (1234,'hyderabad', 'tirupathi');
Insert into Bus values (2345,'hyderabd','Banglore');
Insert into Bus values (23, 'hyderabad', 'Kolkata');
Insert into Bus values (45, 'Tirupathi', 'Bangalore');
Insert into Bus values (34, 'hyderabad', 'Chennai');
```

Inserting values into Bus table:

```
Insert into Passenger values (1, 45,'ramesh', 45,'M','abc123');
Insert into Passenger values (2, 78,'geetha', 36,'F','abc124');
Insert into Passenger values (45, 90, 'ram', 30, 'M', 'abc12');
Insert into Passenger values (67, 89, 'ravi', 50, 'M', 'abc14');
Insert into Passenger values (56, 22, 'seetha', 32, 'F', 'abc55');
```

Few more Examples of DML commands:

```
Select * from Bus; (selects all the attributes and display)
UPDATE BUS SET Bus No = 1 WHERE BUS NO=2;
```

Experiment 7: 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. Display the source and destination having journey time more than 10 hours.
5. Find the ticket numbers of the passengers whose name start with 'A' and ends with 'H'.
6. Find the names of passengers whose age is between 30 and 45.
7. Display all the passengers names beginning with 'A'
8. Display the sorted list of passengers names

Experiment 8 and Experiment 9: 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.

- Write a Query to display the Information present in the Passenger and cancellation tables.

Hint: Use UNION Operator.

- Write a Query to display different travelling options available in British Airways.
- Display the number of days in a week on which the 9W01 bus is available.
- Find number of tickets booked for each PNR_no using GROUP BY CLAUSE. **Hint:** Use GROUP BY on PNR_No.
- Find the distinct PNR numbers that are present.
- Find the number of tickets booked in each class where the number of seats is greater than 1.

Hint: Use GROUP BY, WHERE and HAVING CLAUSES.

- Find the total number of cancelled seats.

Experiment 10: 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.

```
Eg: CREATE TRIGGER updcheck BEFORE UPDATE ON passenger
      FOR EACH ROW
      BEGIN
       IF NEW.TickentNO > 60 THEN
          SET New.Tickent no = Ticket no;
      ELSE
                SET New.Ticketno = 0;
      END IF;
     END;
```

Experiment 11: 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.

```
Eg:CREATE PROCEDURE myProc()
BEGIN
SELECT COUNT(Tickets) FROM Ticket WHERE age>=40;
End;
```

Experiment 12: 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

```
CREATE PROCEDURE myProc(in_customer_id INT)
 BEGIN
 DECLARE v_id   INT;
 DECLARE v_name VARCHAR(30);
 DECLARE c1 CURSOR FOR  SELECT stdId, stdFirstname FROM students WHERE
stdId=in_customer_id;
OPEN c1;
FETCH c1 into v_id, v_name;
Close c1;
END;
```

Tables

BUS
Bus No: Varchar: PK(Public key)
Source : Varchar
Destination : Varchar
Passenger
PPNO: Varchar(15) : PK
Name: Varchar(15)
Age : int (4)
Sex:Char(10) : Male / Female
Address: VarChar(20)
Passenger_Tickets
PPNO: Varchar(15): PK
Ticker_No: Numeric(9)
Reservation
PNR_No: Numeric(9) : FK
Journey_date : datetime(8)
No_of_seats : int (8)
Address : Varchar (50)
Contact_No: Numeric (9) --> Should not be less than 9 and Should not accept any other character other than Integer
Status: Char (2) : Yes / No
Cancellation
PNR_No: Numeric(9) : FK
Journey_date : datetime(8)
No_of_seats : int (8)
Address : Varchar (50)
Contact_No: Numeric (9) --> Should not be less than 9 and Should not accept any other character other than Integer
Status: Char (2) : Yes / No
Ticket
Ticket_No: Numeric (9): PK
Journey_date : datetime(8)
Age : int (4)
Sex:Char(10) : Male / Female
Source : Varchar
Destination : Varchar
Dep_time : Varchar

Reference Books:
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.Mc Laughlin,TMH.
6. SQL Fundamentals,J.J.Patrick,Pearson Education.

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

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

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

UNIT VII:
Exception handling: Exceptions, exception Propagation, Exception handler in Ada, C++ and Java.

Logic Programming Language : Introduction and overview of logic programming, basic elements of prolog, application of logic programming.

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

TEXT BOOKS:

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

REFERENCE BOOKS*:*

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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(OPEN ELECTIVE)
OPERATIONS RESEARCH

UNIT- I: Introduction to operations research:
Basic Definitions of OR, scope, objectives, phases, models and limitations of linear programming problem formulation of LPP, dual LPP, Graphical Method of solving LPP.

UNIT- II: Solutions of LPP:
Simplex method, artificial variables, two-phase method, Big-M method, , degeneracy and unbounded solutions.

UNIT- III: 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.

Assignment model: Formulation, Row-column minima method, Hungarian method for optimal solution. Solving unbalanced assignment problem. Traveling salesman Problem .

UNIT – IV: 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. Jhonson's algorithm and problems

UNIT- V: Dynamic Programming:
Characteristics of dynamic programming. Bellman's principle of optimality Dynamic programming approach for Priority Management employment smoothening, capital budgeting, stage .coach / Shortest path, cargo loading and reliability problems

UNIT – VI: Game Theory:
Competitive games rectangular game , saddle point, minimax (maxmin) method of Optimal strategies,value of the game.Solution of games with saddle points, dominance principle.Rectangle games without saddle point-mixed strategy for 2x2 games, solving game theory problem by L.P.P.

UNIT-VII: 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.

Unit – VIII: Inventory Models:
Inventory models, ABC(all better control)analysis , Inventory costs. Models with deterministic demand- model (a) demand rate uniform and 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", Tata McGraw – Hill, 2008.
2. A.M. Natarajan, P. Balasubramani, A. Tamilarasi, "Operations Research", Pearson Education, 2005.

REFERENCE BOOKS:

1. S D Sharma., "Operations Research Theory & Applications, 3e", Mc.Millan India Ltd, 2007.
2. P. K. Gupta and D. S. Hira, "Operations Research", S.Chand & co., 2007.
3. N.V.S. Raju, "Operations Research", HI-TECH, 2002
4. Panneerselvam, "Operations Research", PHI-2e, 2006, rp2008.
5. F. S. Hillier, G.j. Lieberman, "Introduction to Operations Research – 8ed", Tata McGraw-Hill,2005,rp2007.
6. Billy E. Gillett, "Introduction to Operations Research- A Computer-Oriented Algorithmic Approach", Tata McGraw-Hill, 1979, rp2004
7. THAHA operations research

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(OPEN ELECTIVE)

INTELLECTUAL PROPERTY -RIGHTS AND CYBER LAW

UNIT – I

Intriduction to Intellectual Property,Law of Trademarks, trademarks selection & searching IP Law –Types of IP –Agencies for IP Regisration –Internatonal Treaties . purpose and Function of Trademarks – Acquisition of Trademark Right – Categories of marks – trade names and Business names – protectable matter.Selection and evalution of a mark – Trademark search.

UNIT – II

Trademark registration process,post –registration Procedures,trademark maintenance,Transfer of Rigths to marks.preparing and Filing the application – docketing Critical Dates – Examination process - post – examination Procedure-Registartion.Affidavit of Continued Use- Affidavit of incontestability-renewal of Registations- Docketing Requirements- Loss of Trademark Right – Trademark USE of Marks Owned by Third Parties – Transfer of Ownership or Right in Trademarks.

UNIT - III

Inter partes Proceedings,Infringement,Dilution,New Developments in Trademarks LawInter Partes Proceedings – Infringement of Trade marks- Dilution of Trademarks-Related Trademark claims.protecting a Domain Name –Other Cyberspace Trademarks issues.

UNIT – IV

Law of copyright,Subject Matter of Copy right,Right Afforded by copyright Law Foundations of copyright law-Orginality of material – Fixation Of Material – Exclusion from copyright protection –compilations,collections,and Derivative works.Right of Reproduction – Right to prepare derivative works. Rights of Distribution – Rights to Perform the work publicly-Right to Display the Work publicly- limitations on exclusive Rights.

UNIT – V

Copyright Ownership,Transfers,Duration,Regisration,and searching Copyright Ownership issues-joint works-Ownership in Derivative works-works made for hire – Transfers of Copyright-Termination of Transfers of Copy right Material-Application process and Registation Application – Desposit Materials-Application Process and Registration of Copyright-Searching Copyright Office Records and Deposit Materials-copyrigth Notice.

UNIT – VI

Copyright Infringement,New Developments in Copyright Law,semiconductor Chip protection Act Elements of Infringement-contributory Infringement and vicarious Infringement-Defenses to Infringement- InfringementActions-Remedies for Infringement.Copyright protection for Computer Programs-copyright protection for Automated Databases-copyright in the Electronic Age-The Digital Millenium Copyright Act-Recent Development in Copyright Law-Terms of the Trade-Vessel Hull Protection-Semiconductor Chip Protection.

UNIT – VII

Law of patents, patents searches,Ownership,Transfer patentability-Design patents-Double patenting-patent searching-patent application process-prosecuting the application,post – issuance Actions,term and Maintenance of patents.Ownership Rights-sole and joint Inventors-Disputes over Inventorsship-inventions made by employees and independents contractors-Assinnment of patent Rights-Licensing of patent Rights-Invention Developers and promoters.

UNIT – VIII

Patent Infringement,new developments and International patent law direct Infringement-inducement to Infringe – Contributory Infringement –First scale Doctrine-Clamins Interpretation –defenses to Infringement-remedies for Infringement-Reslove an Infringement dispute-patent Infringement Litigation.New Development in patent Law _International patent protection –paris Convention – patent cooperation Treaty- agreement on Trade Related Aspected Aspects of Intellectual property Rights-patent Law Treaty.

TEXT BOOK:

1. Intellectual Property Rights by Deborah E. Bouchoux, Cengage Learning.

REFERENCE BOOKS*:*

1. Managing Intellectual Property – The Strategic Imerative, Second Edition by Vinod V. Sople, PHI Learning Private Limited.
2. Intellectual Property - Copyrights, Trademarks, and Patents by Richard Stim, Cengage Learning

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(OPEN ELECTIVE)
COMPUTER FORENSICS

UNIT-I

Computer Forensics Fundamentals: What is computer Forensics?, Use of computer Forensics in Law Enforcement, Computer Forensics Assistance to Human Resources/Employment Proceedings, Computer Forensics Services, Benefits of Professional Forensics Methodology, Steps taken by Computer Forensics Specialists

Types of Computer Forensics Technology: Types of Military Computer Forensic Technology, Types of Law Enforcement- Computer Forensic Technology- Types of Business Computer Forensic Technology

UNIT-II

Computer Forensics Evidence and Capture: Data recovery Defined- Data Back-up and Recovery- The Role of Back-up and Data Recovery- The Data Recovery Solution

Evidence Collection and Data Seizure: Why Collect 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

UNIT-III

Duplication and Perservation of Digital Evidence: Preserving the Digital Crime Scene – Computer Evidence Processing Steps – Legal Aspects of Collecting and Preserving Computer Forensic Evidence

Computer Image Verification and Authentication: Special needs of Evidential Authentication – Practical Consideration – Practical Implementation

UNIT – IV

Computer Forensic analysis and validation: Determining what data to collect and analyze, validating forensic data, addressing data – hiding techniques, performing remote acquisitions

Network Forensics: Network forensics overview, performing live acquisitions, developing standard procedures for network forensics, unsing network tools, examining the honeynet project.

UNIT – V

Processing Crime and Incident Scenes: Identifying digital evidence, collecting evidence in private-sector incident scens, processing law enforcement crime scenes, preparing for a search, securing a computer incident or crime scene, seizing digital evidence at the scene, storing digital evidence, obtaining a digital hash, reviewing a case

UNIT – VI

Current Computer Forensic tools: evaluating computer forensic tool needs, computer forensic software tools, computer forensic hardware tools, validating and testing forensics software

UNIT – VII

E – Mail Investigations: Exploring the role of e-mail in investigation, exploring the roles 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.

UNIT – VIII

Working with Windows and DOS Systems: understanding file systems, exploring Microsoft File Structures, Examining NTFS disks, Understanding whole disk encryption, windows registry, Microsoft startup tasks, MS-DOS startup tasks, virtual machines.

TEXT BOOKS:

1. Computer Forensics, Computer Crime Investigation by John R. Vacca, Firewall Media, New Delhi.
2. Computer Forensics and Investigations by Nelson, Phillips Enfinger, Steuart, CENGAGE Learning

REFERENCE BOOKS:

1. Real Digital Forensics by Keith J. Jones, Richard Bejtlieh, 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.

2011-2012 Code: MR11UB01

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III Year B.Tech. CSE -I Sem	L	T/P/D	C
	4	1/-/-	4

MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS

Unit I :Introduction to Managerial Economics:
Definition, Nature and Scope of Managerial Economics–Demand Analysis: Demand Determinants, Law of Demand and its exceptions.

Unit II: Elasticity of Demand:
Definition, Types, Measurement and Significance of Elasticity of Demand. Demand Forecasting, Factors governing demand forecasting, methods of demand forecasting (survey methods, statistical methods, expert opinion method, test marketing, controlled experiments, judgmental approach to demand forecasting)

Unit III :Theory of Production and Cost Analysis:
Production Function – Isoquants and Isocosts, MRTS, Least Cost Combination of Inputs, Cobb-Douglas Production function, Laws of Returns, Internal and External Economies of Scale.
Cost Analysis: Cost concepts, Opportunity cost, fixed vs. Variable costs, explicit costs Vs. Implicit costs, Out of pocket costs vs. Imputed costs. Break-even Analysis (BEA)-Determination of Break-Even Point (simple problems)- Managerial Significance and limitations of BEA.

Unit IV :Introduction to Markets & Pricing Policies:
Market structures: Types of competition, Features of Perfect competition, Monopoly and Monopolistic Competition. Price-Output Determination in case of Perfect Competition and Monopoly.
Objectives and Policies of Pricing- Methods of Pricing: 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 :Business & 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 VI :Capital and Capital Budgeting:
Capital and its significance, Types of Capital, Estimation of Fixed and Working capital requirements, Methods and sources of raising finance.
Nature and scope of capital budgeting, features of capital budgeting proposals, Methods of Capital Budgeting: Payback Method, Accounting Rate of Return (ARR) and Net Present Value Method (simple problems)

Unit VII: 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).

Unit VIII: 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. Aryasri: Managerial Economics and Financial Analysis, 2/e, TMH, 2005.
2. Varshney & Maheswari: Managerial Economics, Sultan Chand, 2003.

REFERENCE BOOKS*:*

1. Ambrish Gupta, Financial Accounting for Management, Pearson Education, New Delhi.
2. H. Craig Peterson & W. Cris Lewis, Managerial Economics, PHI, 4th Ed.
3. Suma Damodaran, Managerial Economics, Oxford University Press.
4. Lipsey & Chrystel, Economics, Oxford University Press.
5. S. A. Siddiqui & A. S. Siddiqui, Managerial Economics & Financial Analysis, New age International Space Publications.
6. Domnick Salvatore: Managerial Economics In a Global Economy, 4th Edition, Thomson.
7. Narayanaswamy: Financial Accounting—A Managerial Perspective, PHI.
8. Raghunatha Reddy & Narasimhachary: Managerial Economics& Financial Analysis, Scitech.
9. S.N.Maheswari & S.K. Maheswari, Financial Accounting, Vikas.
10. Truet and Truet: Managerial Economics:Analysis, Problems and Cases, Wiley.
11. Dwivedi:Managerial Economics, 6th Ed., Vikas.

Prerequisites: Nil
Objective: To explain the basic principles of managerial economics, accounting and current business environment underlying business decision making.
Codes/Tables: Present Value Tables need to be permitted into the examinations Hall.

Question Paper Pattern: 5 Questions to be answered out of 8 questions.
Each question should not have more than 3 bits.

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MICROPROCESSORS AND INTERFACING

UNIT-I
An over view of 8085, Architecture of 8086 Microprocessor. Special functions of General purpose registers. 8086 flag register and function of 8086 Flags. Addressing modes of 8086. Instruction set of 8086. Assembler directives, simple programs, procedures, and macros.

UNIT-II
Assembly language programs involving logical, Branch & Call instructions, sorting, evaluation of arithmetic expressions, string manipulation.

UNIT-III
Pin diagram of 8086-Minimum mode and maximum mode of operation. Timing diagram. Memory interfacing to 8086 (Static RAM & EPROM). Need for DMA. DMA data transfer Method. Interfacing with 8237/8257.

UNIT-IV
8255 PPI – various modes of operation and interfacing to 8086. Interfacing Keyboard, Displays, Stepper Motor and actuators. D/A and A/D converter interfacing.

UNIT-V
Interrupt structure of 8086. Vector interrupt table. Interrupt service routines. Introduction to DOS and BIOS interrupts. 8259 PIC Architecture and interfacing cascading of interrupt controller and its importance.

UNIT-VI
Serial data transfer schemes. Asynchronous and Synchronous data transfer schemes. 8251 USART architecture and interfacing. TTL to RS 232C and RS232C to TTL conversion. Sample program of serial data transfer. Introduction to High-speed serial communications standards, USB.

UNIT-VII
Advanced Micro Processors - Introduction to 80286, Salient Features of 80386, Real and Protected Mode Segmentation & Paging, Salient Features of Pentium, Branch Prediction, Overview of RISC Processors.

UNIT-VIII
8051 Microcontroller Architecture, Register set of 8051, Modes of timer operation, Serial port operation, Interrupt structure of 8051, Memory and I/O interfacing of 8051.

TEXT BOOKS :
1. Advanced microprocessor and Peripherals - A.K.Ray and K.M.Bhurchandi, TMH, 2000.
2. Micro Controllers – Deshmukh, Tata McGraw Hill Edition.

REFERENCE BOOKS*:*

1. Micro Processors & Interfacing – Douglas U. Hall, 2007.
2. The 8088 and 8086 Micro Processors – PHI, 4th Edition, 2003.
3. Micro Computer System 8086/8088 Family Architecture, Programming and Design - By Liu and GA Gibson, PHI, 2nd Ed.,

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

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

UNIT II:

Process Management – Process concepts threads, scheduling-criteria algorithms, their evaluation, Thread scheduling, case studies UNIX, Linux, Windows

UNIT III:

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

UNIT IV:

Memory Management : Swapping, contiguous memory allocation, paging, structure of the page table , segmentation, virtual memory, demand paging, page-Replacement, algorithms, case studies UNIX, Linux, Windows, Allocation of Frames, Thrashing case studies.

UNIT V:

Principles of deadlock – system model, deadlock characterization, deadlock prevention, detection and avoidance, recovery form deadlock, I/O systems, Hardware, application interface, kernel I/O subsystem, Transforming I/O requests Hardware operation, STREAMS, performance.

UNIT VI:

File system Interface- the concept of a file, Access Methods, Directory structure, File system mounting, file sharing, protection.

File System implementation- File system structure, file system implementation, directory implementation, allocation methods, free-space management, efficiency and performance, case studies. UNIX, Linux, Windows

UNIT VII:

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 VIII:

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 defences, fire walling 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

REFERENCE BOOKS*:*

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.

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

DATA COMMUNICATIONS AND COMPUTER NETWORKS

UNIT I:
Introduction: Data Communications, Networks, The Internet, Protocols and Standards, Network Models, Layered Tasks, The OSI Model, Layers in the OSI Model, TCP/IP Protocol Suite, Addressing, Physical Layer and Media, Data and Signals, Analog and Digital, Periodic Analog Signals, Digital Signals, Transmission impairment, Data Rate Limits, Performance, Digital Transmission, Digital-to-Digital Conversion, Analog-to-Digital Conversion, Analog Transmission, Digital-to-analog Conversion, Analog-to-analog Conversion

UNIT II:
Bandwidth utilization: Multiplexing and Spreading, Multiplexing, Spread Spectrum, Transmission Media, Guided Media, Unguided Media: Wireless, Switching, Circuit-Switched Networks, Datagram Networks, Virtual-Circuit Networks, Structure of a Switch, Using Telephone and Cable Networks for Data Transmission, Telephone Networks, Dial-up Modems, Digital Subscriber Line, Cable TV Networks, Cable TV for Data Transfer

UNIT III:
Error Detection and Correction, Introduction, Block Coding, Liner Block Codes, Cyclic Codes, Checksum, Data Link Control, Framing, Flow and Error Control, Protocols, Noiseless Channels, HDLC, Point-to-Point Protocol, Multiple Access, Random Access, Aloha, Controlled Access, Channelization, IEEE Standards, Standard Ethernet, Changes in the Standard, Fast Ethernet, Gigabit Ethernet, IEEE 802.11, Bluetooth

UNIT IV:
Connecting LANs, Backbone Networks, and Virtual LANs, Connecting Devices, Backbone Networks, Virtual LANs, Cellular Telephony, Satellite Networks, Sonet/SDH, Architecture, Sonet Layers, Sonet Frames, STS Multiplexing, Sonet Networks, Virtual Tributaries, Virtual-Circuit Networks: Frame Relay and ATM, Frame Relay, ATM, ATM LANs

UNIT V:
Network Layer: Logical Addressing, IPv4 Addresses, IPv6 Addresses, Network Layer: Internet Protocol, Internetworking, IPv4, IPv6, Transition from IPv4 to IPv6, Network Layer: Adress Mapping, Error Reporting and Multicasting, Address Mapping, ICMP, IGMP, ICMPv6, Network Layer: Delivery, Forwarding and Routing, Delivery, Forwarding, Unicast Routing Protocols, Multicast Routing Protocols

UNIT VI:
Transport Layer: Process-Process Delivery: UDP, TCP and SCTP, Process-to-Process Delivery, User Datagram Protocol (UDP), TCP, SCTP, Congestion Control and Quality of Service, Data Traffic, Congestion, Congestion Control, Two Examples, Quality Service, Techniques to improve QoS, Integrated Services, Differentiated Services, QoS in Switched Networks

UNIT VII:
Application Layer: Domain Name System, Name Space, Domain Name Space, Distribution of Name Space, DNS in the Internet, Resolution, DNS Messages, Types of Records, Registrars, Dynamic Domain Name System (DDNS), Encapsulation, Rmote Logging, Electronic Mail and File Transfer, Remote Logging, Telnet, Electronic Mail, File Transfer

UNIT VIII:
WWW and HTTP: Architecture, Web Documents, HTTP, Network Management: SNMP, Network Management System, Simple Network Management Protocol (SNMP), Multimedia, Digitizing Audio and Video, Audio and Video Compression, Streaming Stored Audio/Video, Streaming Live Audio/Video, Real-Time Interactive Audio/Video, RTP, RTCP, Voice over IP

TEXT BOOKS:

1. Data Communications and Networking, Fourth Edition by Behrouza A. Forouzan, TMH.
2. Computer Networks, A.S.Tanenbaum, 4th edition, Pearson education.

REFERENCE BOOKS:

1. Introduction to Data communications and Networking, W.Tomasi, Pearson education.
2. Data and Computer Communications, G.S.Hura and M.Singhal, CRC Press, Taylor and Francis Group.
3. An Engineering Approach to Computer Networks-S.Keshav, 2nd Edition, Pearson Education.
4. Understanding communications and Networks, 3rd Edition, W.A.Shay, Cengage Learning.

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MICROPROCESSORS AND INTERFACING LAB

Minimum of 12 experiments are to be conducted.

1. Write and execute an Assembly language program (ALP) to 8086 processor to add subtract and multiply two 16 bit unsigned numbers. Store the result in extra segment.
2. Write and execute an Assembly language program (ALP) to 8086 processor to divide a 32 bit unsigned number by a 16- bit number. Store the result in stack segment.
3. Write and execute an Assembly language program (ALP) to 8086 processor to sort the given array of 32 bit numbers in ascending and descending order
4. Write and execute an Assembly language program (ALP) to 8086 processor to pick the median from the given array of numbers.
5. Write and execute an Assembly language program (ALP) to 8086 processor to find the length of a given string which terminates with a special character.
6. Write and execute an Assembly language program (ALP) to 8086 processor to reverse the given string and verify whether it is a palindrome.
7. Write and execute an Assembly language program (ALP) to 8086 processor to verify the password
8. Write and execute an Assembly language program (ALP) to 8086 processor to insert/delete a character /number from a given string.
9. Write and execute an Assembly language program (ALP) to 8086 processor to call the delay subroutine and display the character on the LED display.
10. Interface a keypad to 8086 microprocessor and display the key number pressed on the 7 – segment display which is also interfaced to 8086.
11. Write an interrupt service routine to 8086 whenever there is an interrupt request on interrupt pin, which displays “hello” on a LCD.
12. Interface an 8086 microprocessor trainer kit to PC and establish a communication between them through RS232.
13. Interface DMA controller to 8086 and transfer bulk data from memory to I/O device.
14. Interface a stepper motor to 8086 and operate it in clockwise and anti-clockwise by choosing variable step-size.
15. Interface an 8-bit ADC to 8086 and generate digital output and store it in memory for the given square/ramp/triangle wave form inputs.
16. Interface an ADC to 8086 and generate step, ramp, triangle and square waveforms with different periods.

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COMPUTER NETWORKS AND OPERATING SYSTEMS LAB

List Of Experiments:

Part-A

1. Implement the data link layer farming 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 art each node using distance vector routing algorithm
5. Take an example subnet of hosts. Obtain broadcast tree for it.
6. Take a 64 bit playing text and encrypt the same using DES algorithm.
7. Write a program to break the above DES coding
8. Using RSA algorithm encrypts a text data and Decrypt the same.

Part -B

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

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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, and 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.

UNIT - III
Class & Object Diagrams: Terms, concepts, modeling techniques for Class & Object Diagrams.

UNIT- IV
Basic Behavioral Modeling-I: Interactions, Interaction diagrams.

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

UNIT - VI
Advanced Behavioral Modeling: Events and signals, state machines, processes and Threads, time and space, state chart diagrams.

UNIT-VII
Architectural Modeling: Component, Deployment, Component diagrams and Deployment diagrams.

UNIT - VIII
Case Study: The Unified Library application.

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

REFERENCE BOOKS:
1. Meilir Page-Jones: Fundamentals of Object Oriented Design in UML, Pearson Education.
2. Pascal Roques: Modeling Software Systems Using UML2, WILEY- Dreamtech India Pvt. Ltd.
3. Atul Kahate: Object Oriented Analysis & Design, The McGraw-Hill Companies.
4. Mark Priestley: Practical Object-Oriented Design with UML,TATA McGrawHill
5. Appling UML and Patterns: An introduction to Object – Oriented Analysis and Design and Unified Process, Craig Larman, Pearson Education.

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SOFTWARE TESTING METHODOLOGIES

UNIT I:
Introduction: Purpose of testing, Dichotomies, model for testing, consequences of bugs, taxonomy of bugs

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.

UNIT III:
Transaction Flow Testing: Transaction flows, transaction flow testing techniques. Dataflow testing:-Basics of dataflow testing, strategies in dataflow testing, application of dataflow testing.

UNIT IV:
Domain Testing:-domains and paths, Nice & ugly domains, domain testing, domains and interfaces testing, domain and interface testing, domains and testability.

UNIT V:
Paths, Path products and Regular expressions: Path products & path expression, reduction procedure, applications, regular expressions & flow anomaly detection.

UNIT VI:
Logic Based Testing: Overview, decision tables, path expressions, kv charts, specifications.

UNIT VII:
State, State Graphs and Transition testing: State graphs, good & bad state graphs, state testing, Testability tips.

UNIT VIII:
Graph Matrices and Application: Motivational overview, matrix of graph, relations, power of a matrix, node reduction algorithm, building tools.
Usage of JMeter and Winrunner tools for functional / Regression testing, creation of test script for unattended testing, synchronization of test case, Rapid testing, Performance testing of a data base application and HTTP connection for website access.

TEXT BOOKS:
1. Software testing techniques - Baris Beizer, Dreamtech, second edition.
2. Software Testing Tools – Dr.K.V.K.K.Prasad, Dreamtech.

REFERENCE BOOKS*:*
1. The craft of software testing - Brian Marick, Pearson Education.
2. Software Testing Techniques – SPD(Oreille)
3. Software Testing in the Real World – Edward Kit, Pearson.
4. Effective methods of Software Testing, Perry, John Wiley.
5. Art of Software Testing – Meyers, John Wiley.

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NETWORK SECURITY

UNIT - I
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, Internet Standards and RFCs, Buffer overflow & format string vulnerabilities, TCP session hijacking, ARP attacks, route table modification, UDP hijacking, and man-in-the-middle attacks.

UNIT - II
Conventional Encryption Principles, Conventional encryption algorithms, cipher block modes of operation, location of encryption devices, key distribution Approaches of Message Authentication, Secure Hash Functions and HMAC.

UNIT - III
Public key cryptography principles, public key cryptography algorithms, digital signatures, digital Certificates, Certificate Authority and key management Kerberos, X.509 Directory Authentication Service.

UNIT - IV
Email privacy: Pretty Good Privacy (PGP) and S/MIME.

UNIT - V
IP Security Overview, IP Security Architecture, Authentication Header, Encapsulating Security Payload, Combining Security Associations and Key Management.

UNIT - VI
Web Security Requirements, Secure Socket Layer (SSL) and Transport Layer Security (TLS), Secure Electronic Transaction (SET).

UNIT - VII
Basic concepts of SNMP, SNMPv1 Community facility and SNMPv3. Intruders, Viruses and related threats.

UNIT - VIII
Firewall Design principles, Trusted Systems. Intrusion Detection Systems.

TEXT BOOKS:

1. Network Security Essentials (Applications and Standards) by William Stallings Pearson Education.
2. 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 Permeh, wiley Dreamtech

REFERENCE BOOKS*:*

1. Fundamentals of Network Security by Eric Maiwald (Dreamtech press)
2. Network Security - Private Communication in a Public World by Charlie Kaufman, Radia Perlman and Mike Speciner, Pearson/PHI.
3. Cryptography and network Security, Third edition, Stallings, PHI/Pearson Principles of Information Security, Whitman, Thomson.
5. Network Security: The complete reference, Robert Bragg, Mark Rhodes, TMH
6. Introduction to Cryptography, Buchmann, Springer.

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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.

UNIT – III

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

UNIT – IV

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

UNIT – V

Symbol Tables: Symbol table format, organization for block structures languages, hashing, and 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 – VI

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

UNIT – VII

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

UNIT – VIII

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

TEXT BOOKS:

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

REFERENCE BOOKS*:*

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

2011-2012 Code: MR11U605

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WEB TECHNOLOGIES

Objectives:
This course demonstrates an in-depth understanding of the tools and Web technologies necessary for business application design and development. The course covers client side scripting like HTML, JavaScript and server side scripting like servlets, JSPs. And also XML and web servers and database interfacing.

UNIT-I:
HTML Common tags- List, Tables, images, forms, Frames; Cascading Style sheets;

UNIT-II:
Introduction to Java Scripts, Objects in Java Script, Dynamic HTML with Java Script

UNIT-III:
XML: Document type definition, XML Schemas, Document Object model, Presenting XML, Using XML Processors: DOM and SAX

UNIT-IV:
Java Beans: Introduction to Java Beans, Advantages of Java Beans, BDK Introspection, Using Bound properties, Bean Info Interface, Constrained properties Persistence, Customizes, Java Beans API, Introduction to EJB's

UNIT-V:
Web Servers and Servlets: Tomcat web server, Introduction to Servelets: Lifecycle of a Serverlet, JSDK, The Servelet API, The javax.servelet Package, Reading Servelet parameters, and Reading Initialization parameters. The javax.servelet HTTP package, Handling Http Request & Responses, Using Cookies-Session Tracking, Security Issues,

UNIT-VI:
Introduction to JSP: The Problem with Servelet. The Anatomy of a JSP Page, JSP Processing. JSP Application Design with MVC Setting Up and JSP Environment: Installing the Java Software Development Kit, Tomcat Server & Testing Tomcat

UNIT-VII:
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

UNIT VIII:
Database Access: Database Programming using JDBC, Studying Javax.sql.* package, Accessing a Database from a JSP Page, Application – Specific Database Actions, 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, 3)
2. The complete Reference Java 2 Fifth Edition by Patrick Naughton and Herbert Schildt. TMH (Chapters: 25) (UNIT 4)
3. Java Server Pages –Hans Bergsten, SPD O'Reilly (UNITs 5, 6, 7, 8)

REFERENCE BOOKS:

1. Programming world wide web-Sebesta,Pearson
2. Core SERVLETS ANDJAVASERVER PAGES VOLUME 1: CORE TECHNOLOGIES By Marty Hall and Larry Brown Pearson
3. Internet and World Wide Web – How to program by Dietel and Nieto PHI/Pearson Education Asia.
4. Jakarta Struts Cookbook, Bill Siggelkow, S P D O'Reilly for chap 8.
5. Murach's beginning JAVA JDK 5, Murach, SPD
6. An Introduction to web Design and Programming –Wang-Thomson
7. Web Applications Technologies Concepts-Knuckles,John Wiley
8. Programming world wide web-Sebesta,Pearson
9. Web Warrior Guide to Web Programmming-Bai/Ekedaw-Thomas
10. Beginning Web Programming-Jon Duckett WROX.
11. Java Server Pages, Pekowsky, Pearson.

2011-2012 Code: MR11UB02

MALLA REDDY ENGINEERING COLLEGE
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III Year B.Tech. CSE -II Sem	L	T/P/D	C
	3	-/-/-	3

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, Systems Approach to Management, Leadership Styles, Social responsibilities of Management.

Unit - II

Designing Organisational Structures : Basic concepts related to Organisation - Departmentation 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 - III

Operations Management : Principles and Types of Plant Layout-Methods of production (Job, batch and Mass Production), Work Study -Basic procedure involved in Method Study and Work Measurement- Statistical Quality Control: chart, R chart, c chart, p chart, (simple Problems), Acceptance Sampling, Deming's contribution to quality.

Unit - VI

a) Materials Management: Objectives, Need for Inventory control, EOQ, ABC Analysis, Purchase Procedure, Stores Management and Stores Records.
b) Marketing: Functions of Marketing, Marketing Mix, Marketing Strategies based on Product Life Cycle, Channels of distribution

Unit - V

Human Resources Management (HRM) : Concepts of HRM, HRD and Personnel Management and Industrial Relations (PMIR), HRM vs.PMIR, Basic functions of HR Manager: Manpower planning, Recruitment, Selection, Training and Development, Placement, Wage and Salary Administration, Promotion, Transfer, Separation, Performance Appraisal, Grievance Handling and Welfare Administration, Job Evaluation and Merit Rating.

Unit - VI

Project Management *(PERT/CPM)* : Network Analysis, Programme Evaluation and Review Technique (PERT), Critical Path Method (CPM), Identifying critical path, Probability of Completing the project within given time, Project Cost Analysis, Project Crashing. (Simple problems)

Unit - VII

Strategic Management : Mission, Goals, Objectives, Policy, Strategy, Programmes, Elements of Corporate Planning Process, Environmental Scanning, Value Chain Analysis, SWOT Analysis, Steps in Strategy Formulation and Implementation, Generic Strategy alternatives.

Unit - VIII

Contemporary Management Practices : Basic concepts of MIS, End User Computing, Materials Requirement Planning (MRP), Just-In-Time (JIT) System, Total Quality Management (TQM), Six sigma and Capability Maturity Model (CMM) Levels, Supply Chain Management, Enterprise Resource Planning (ERP), Performance Management, Business Process outsourcing (BPO), Business Process Re-engineering and Bench Marking, Balanced Score Card.

TEXT BOOKS:

1. Aryasri : *Management Science*, TMH, 2004.
2. Stoner, Freeman, Gilbert, *Management*, 6th Ed, Pearson Education, New Delhi, 2004.

REFERENCE BOOKS*:*

1. Kotler Philip & Keller Kevin Lane: Marketing Mangement 12/e, PHI, 2005
2. Koontz & Weihrich: Essentials of Management, 6/e, TMH, 2005
3. Thomas N.Duening & John M.Ivancevich Management — Principles and Guidelines, Biztantra,2003.
4. Kanishka Bedi, *Production and Operations Management*, Oxford University Press, 2004.
5. Memoria & S.V.Gauker, *Personnel Management*, Himalaya, 25/e, 2005
6. Samuel C.Certo: *Modern Management*, 9/e, PHI, 2005
7. Schermerhorn, Capling, Poole & Wiesner: *Management*, Wiley, 2002.
8. Parnell: Strategic Management, Biztantra,2003.
9. Lawrence R Jauch, R.Gupta &William F.Glueck: Business Policy and Strategic Management, Frank Bros.2005.
10. L.S.Srinath: PERT/CPM,Affiliated East-West Press, 2005.

2011-2012 Code: MR11U0E1

MALLA REDDY ENGINEERING COLLEGE
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III Year B.Tech. CSE –II Sem	L	T/P/D	C
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ADVANCED ENGLISH COMMUNICATION SKILLS LAB

1. Introduction
The introduction of the English Language Lab is considered essential at 3rd year level. At this stage the students need to prepare themselves for their careers which may require them to listen to, read, speak and write in English both for their professional and interpersonal communication in the globalised context.

The proposed course should be an integrated theory and lab course to enable students to use 'good' English and perform the following:

- Gather ideas and information, to organise ideas relevantly and coherently.
- Engage in debates.
- Participate in group discussions.
- Face interviews.
- Write project/research reports/technical reports.
- Make oral presentations.
- Write formal letters.
- Transfer information from non-verbal to verbal texts and vice versa.
- To take part in social and professional communication.

2. Objectives:
This Lab focuses on using computer-aided multimedia instruction for language development to meet the following targets:

- To improve the students' fluency in English, through a well-developed vocabulary and enable them to listen to English spoken at normal conversational speed by educated English speakers and respond appropriately in different socio-cultural and professional contexts.
- Further, they would be required to communicate their ideas relevantly and coherently in writing.

3. Syllabus:
The following course content is prescribed for the Advanced Communication Skills Lab:

- Functional English - starting a conversation – responding appropriately and relevantly – using the right body language – role play in different situations.
- Vocabulary building – synonyms and antonyms, word roots, one-word substitutes, prefixes and suffixes, study of word origin, analogy, idioms and phrases.
- Group Discussion – dynamics of group discussion , intervention, summarizing, modulation of voice, body language, relevance, fluency and coherence.
- Interview Skills – concept and process, pre-interview planning, opening strategies, answering strategies, interview through tele and video-conferencing.
- Resume' writing – structure and presentation, planning, defining the career objective, projecting ones strengths and skill-sets, summary, formats and styles, letter-writing.
- Reading comprehension – reading for facts, guessing meanings from context, scanning, skimming, inferring meaning, critical reading.
- Technical Report writing – Types of formats and styles, subject matter – organization, clarity, coherence and style, planning, data-collection, tools, analysis.

4. Minimum Requirement:
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:

i) P – IV Processor
   a) Speed – 2.8 GHZ
   b) RAM – 512 MB Minimum
   c) Hard Disk – 80 GB
ii) 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)
- **The following software from 'train2success.com'**
  - **Preparing for being Interviewed,**
  - **Positive Thinking,**
  - **Interviewing Skills,**
  - **Telephone Skills,**
  - **Time Management**
  - **Team Building,**
  - **Decision making**
- **English in Mind**, Herbert Puchta and Jeff Stranks with Meredith Levy, Cambridge

6. Books Recommended:

1. **Effective Technical Communication**, M. Ashraf Rizvi, Tata Mc. Graw-Hill Publishing Company Ltd.
2. **A Course in English communication** by Madhavi Apte, Prentice-Hall of India, 2007.
3. **Communication Skills** by Leena Sen, Prentice-Hall of India, 2005.
4. **Academic Writing- A Practical guide for students** by Stephen Bailey, Rontledge Falmer, London & New York, 2004.

5. **English Language Communication : A Reader cum Lab Manual** Dr A Ramakrishna Rao, Dr G Natanam & Prof SA Sankaranarayanan, Anuradha Publications, Chennai
6. **Body Language- Your Success Mantra** by Dr. Shalini Verma, S. Chand, 2006.
7. **DELTA's key to the Next Generation TOEFL Test: Advanced Skill Practice**, New Age International (P) Ltd., Publishers, New Delhi.
8. Books on **TOEFL/GRE/GMAT/CAT** by Barron's/cup
9. **IELTS series with CDs** by Cambridge University Press.
10. **Technical Report Writing Today** by Daniel G. Riordan & Steven E. Pauley, Biztantra Publishers, 2005.
11. **Basic Communication Skills for Technology** by Andra J. Rutherford, 2nd Edition, Pearson Education, 2007.
12. **Communication Skills for Engineers** by Sunita Mishra & C. Muralikrishna, Pearson Education, 2007.
13. **Objective English** by Edgar Thorpe & Showick Thorpe, 2nd edition, Pearson Education, 2007.
14. **Cambridge Preparation for the TOEFL** Test by Jolene Gear & Robert Gear, 4th Edition.
15. **Technical Communication** by Meenakshi Raman & Sangeeta Sharma, Oxford University Press.

DISTRIBUTION AND WEIGHTAGE OF MARKS:

Advanced Communication Skills Lab Practicals:

1. The practical examinations for the English Language Laboratory practice shall be conducted as per the University norms prescribed for the core engineering practical sessions.
2. For the English Language lab sessions, there shall be a continuous evaluation during the year for 25 sessional marks and 50 End Examination marks. Of the 25 marks, 15 marks shall be awarded for day-to-day work and 10 marks to be awarded by conducting Internal Lab Test(s). The End Examination shall be conducted by the teacher concerned with the help of another member of the staff of the same department of the same institute.

2011-2012 Code: MR11U521

MALLA REDDY ENGINEERING COLLEGE

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III Year B.Tech.CSE -I Sem	L	T/P/D	C
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WEB TECHNOLOGIES AND COMPILER DESIGN LAB

Objective :

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

Hardware and Software required :

1. A working computer system with either Windows or Linux
2. A web browser either IE or firefox
3. Tomcat web server and Apache web server
4. XML editor like Altova Xml-spy [www.Altova.com/**XML**Spy – 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 contain description of the web site.

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

Fig 1.1

2) LOGIN PAGE: This page looks like below

Logo	Web Site Name			
Home	Login	Registration	Catalogue	Cart
CSE ECE EEE CIVIL	Login : Password:			
	Submit	Reset		

3) CATOLOGUE PAGE:
The catalogue page should contain the details of all the books available in the web site in a table.
The details should contain the following:

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

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

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

Week-2:
4) CART PAGE:
The cart page contains the details about the books which are added to the cart.
The cart page should look like this:

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

5) REGISTRATION PAGE:

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

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

WEEK 3:

VALIDATION:

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

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

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

Week-4:

Design a web page using **CSS (C**ascading **S**tyle **S**heets**)** which includes the following:

1) Use different font, styles:

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

For example:

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

</HEAD>

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

For example:

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

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

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

</HTML>
```

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

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

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

4) Define styles for links as

A:link
A:visited
A:active
A:hover

Example:

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

5) Work with layers:

For example:

LAYER 1 ON TOP:

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

```
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-
```

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 when we change the color in the "property window ".

Week-7:

1) Install TOMCAT web server and APACHE.
   While installation assign port number 4040 to TOMCAT and 8080 to APACHE.
   Make sure that these ports are available i.e., no other process is using this port.
2) Access the above developed static web pages for books web site, using these servers by putting the web pages developed in week-1 and week-2 in the document root.

Access the pages by using the urls : http://localhost:4040/rama/books.html (for tomcat), http://localhost:8080/books.html (for Apache)

Week-8:

User Authentication:

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

1. Create a Cookie and add these four user id's and passwords to this Cookie.
2. Read the user id and passwords entered in the Login form (week1) and authenticate with the values (user id and passwords) available in the cookies.

If he is a valid user (i.e., user-name and password match) you should welcome him by name (user-name) else you should display "You are not an authenticated user ".
Use init-parameters to do this. Store the user-names and passwords in the webinf.xml and access them in the servlet by using the getInitParameters () method.

Week-9:

Install a database (Mysql or Oracle).
Create a table which should contain at least the following fields: name, password, email-id, phone number (these should hold the data from the registration form).
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-10:

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-11:

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

Week-12:

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

Compiler Design lab:

Objective:

- To provide an understanding of the language translation peculiarities by designing a complete translator for a mini language. Recommended Systems /Software Requirements.
- Intel based desktop PC with minimum of 166MHZ or faster processor with atleast 64MB RAM and 100MB free disk space
- C++ complier and JDK kit.

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

<Program> ::=< block>
<block>:= {<variable definition><slist>}| {<slist>}
{<variable definition><slist>}::=int<vardeflist>;
<vardeflist>::=<vardec>|<vardec>,<vardeflist>
<vardec>::=<identifier>|<identifier>[<constant>]
<slist>::=<statement>| <statement>;<slist>
<statement>::=<assignment>|<ifstatement>|<whilestatement>|<block>|<printstatement>|<empty>
<assignment>::=<identifier>=<expression>|<identifier>[<expression>]=<expression>
<ifstatement>::=if<bexpression>then<slist>else<slist>endif|if<expression>then<slist>endif
<whilestatement>::=while<bexpression>do<slist>enddo
<pritnstatement>::=print(<expression>)
<expression>::=<expression><addingop><term>|<term>|<addingop><term>
<bexpression>::=<expression><relop><expression>
<relop>::=<|<=|==|>=|!=
<addingop>::=+|-
<term>::=<term><mutiop><factor>|<factor>
<mutiop>::=*|/
<factor>::=<constant>|<identifier>|<identifier>[<expression>]|(<expression>)
<constant>:=<digit>|<digit><constant>
<identifier>::=<identifier><lettertodigit>|<letter>
<lettertodigit>::=<letter>|<digit>
<letter>::=a|b|c|d|e|f|g|h|i|j|k|l|m|n|o|p|q|r|s|t|u|v|w|x|y|z
<digit>::=0|1|2|3|4|5|6|7|8|9
<empty> has the obvious meaning

Comments(zero or more characters enclosed between the standard C/Java-style comment brackets/*….*/)can be inserted. The language has rudimentary support for 1-dimension arrays. The declaration int a[3] declares an array of three elements,referenced as a[0],a[1] and a[2]. Note also that you should worry about the scoping of names.

A simple program written in this language is:

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

1. Design a Lexical analyser for the above language. The Lexical analyzer should ignore redundant spaces, tabs and newlines. It should also ignore comments. Although the syntax specification states that identifier can be arbitrarily long, you may restrict the length to some reasonable value.
2. Implement the lexical analyzer using JLex, flex, or lex or other lexical analyzer generating tools.
3. Design Predictive parser for the given language.
4. Design LARL bottom up parser for the above language.
5. Convert the BNF rules into YACC form and write code generate abstract syntax tree.
6. Write program to generate machine code form the abstract syntax tree by the parser. The following instruction set may be considered as target code.

The following is a simple register-based machine, supporting a total of 17 instructions. It has three distinct internal storage areas. The first is the set of 8 registers, used by the individual instructions detailed below; the second is an area used the storage of program. The instructions can be preceded by a label. This consists of an integer range of 1 to 9999 and the label is followed by a colon to separate it from the rest of the instruction. The numerical label can be used as the argument to a jump instruction, as detailed below:

In the description of the individual instructions below, instruction argument types are specified as follows:
R specifies a register in the form R0, R1, R2, R3, R4, R5, R6, R7 or R8
L specifies a numerical label (in the range 1 to 9999)
V specifies a "variable location" (a variable number or a variable location pointed to by a register – see below)

A specifies a constant value, a variable location, a register or a variable location pointed to by a register. Constant values are specified as an integer value, optionally preceded by a minus sign, preceded by a # symbol. An indirect address is specified by an @ followed by a register.
So, for example, an A-Type argument could have form 4(variable number 4), #4(the constant value 4), r4(register 4) or @r4 (the contents of register 4 identifies the variable location to be accessed).
The instruction set is defined as follows:
LOAD A, R Loads the integer value specified by A into register R.
STORE R, V Stores the value in register R to variable V.
OUT R Outputs the value in register R.
NEG R Negates the value in register R.
ADD A, R adds the value specified by A to register R, leaving the result in register R.
SUB A, R subtracts the value specified by A from register R, leaving the result in register R
MUL A, R multiplies the value specified by A by register R, leaving the result in register R.
DIV A, R Divides the register R by the value specified by A, leaving the result in register R.
JMPL causes an unconditional jump to the instruction with label L
JEQ R, L jumps to the instruction with label L if the value in the register R is Zero.
JNE R, L jumps to the instruction with label L if the value in the register R is not Zero.
JGE R, L jumps to the instruction with label L if the value in the register R is greater than or equal to Zero.
JGT R, L jumps to the instruction with label L if the value in the register R is greater then Zero.
JLE R, L jumps to the instruction with label L if the value in the register R is less than or equal to Zero.
JLT R, L jumps to the instruction with label L if the value in the register R is less than Zero.
NOP is an instruction with no effect. It can be tagged by a label.
STOP stops execution of the machine. All programs should terminate by executing a STOP instruction.