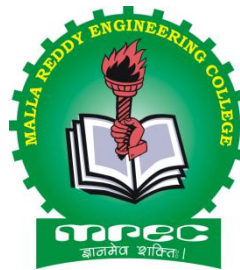# COURSE STRUCTURE
AND
DETAILED SYLLABUS
(MR14 Regulations)

for

B.Tech (COMPUTER SCIENCE AND ENGINEERING)

(Applicable for the batches admitted from 2014-15)

MALLA REDDY ENGINEERING COLLEGE
(AUTONOMOUS)

MALLA REDDY ENGINEERING COLLEGE
(AUTONOMOUS)
Maisammaguda, Dhulapally (Post via. Kompally), Secunderabad- 500100
MR-14 Regulations
B. TECH. COMPUTER SCIENCE AND ENGINEERING

I YEAR- I semester

Code	Subject	L	T/P/D	C
40E01	English - I	3	-/-/-	3
40P01	Engineering Physics - I	4	-/-/-	4
40C01	Engineering Chemistry - I	3	-/-/-	3
40M01	Mathematics - I	4	-/-/-	4
40501	Computer Programming	4	-/-/-	4
40301	Engineering Drawing - I	2	1/-/3	4
40502	Computer Programming Lab	-	-/3/-	2
40P03	Engineering Physics Lab	-	-/3/-	2
40305	Engineering & IT Workshop	-	-/3/-	2
	Total	20	13	28

I YEAR- II semester

Code	Subject	L	T/P/D	C
40E02	English & Professional Ethics	4	1/-/-	4
40P02	Engineering Physics – II	3	-/-/-	3
40C02	Engineering Chemistry – II	3	-/-/-	3
40M02	Mathematics – II	4	1/-/-	4
40M03	Mathematics – III	4	1/-/-	4
40503	Data Structures and Software Tools	4	1/-/-	4
40C03	Engineering Chemistry Lab	-	-/3/-	2
40504	Data structures and Software Tools Lab	-	-/3/-	2
40E03	English Language Communication Skills Lab	-	-/3/-	2
	Total	22	13	28

II YEAR I SEMESTER

Code	Subject	L	T/P/D	C
40M10	Probability and Statistics	3	1	4
40505	Mathematical Foundations of Computer Science	3	1	4
40506	Advanced Data Structures	4	1	4
40436	Digital logic Design	4	1	4
40230	Basic Electrical and Electronics Engineering	4	--	4
40B01	Managerial Economics and Financial Analysis	4	1	4
40231	Basic Electrical and Electronic Engineering Lab	-	3	2
40507	Advanced Data Structures lab	-	3	2
	Total	22	11	28

II YEAR II SEMESTER

Code	Subject	L	T/P/D	C
40105	Environmental Studies	3	1	4
40508	Database Management Systems	4	1	4
40509	Object Oriented Programming	4	--	4
40510	Computer Organization	4	--	4
40511	Formal Languages and Automata Theory	3	1	4
40512	Design and Analysis of Algorithms	3	1	4
40513	Database Management Systems lab	-	3	2
40514	Object Oriented Programming Lab	-	3	2
	Total	21	10	28

III YEAR I SEMESTER

Code	Subject	L	T/P/D	C
40419	Micro processor and Micro controller	3	1	4
40515	Web Technologies	3	1	4
40516	Computer Networks	3	1	4
40517	Compiler Design	4	1	4
40518	Software Engineering	3	1	4
40519	Operating systems	3	1	4
40520	Web Technologies and Compiler Design lab	-	3	2
40521	Computer Networks and Operating systems lab	-	3	2
	Total	19	12	28

III YEAR II SEMESTER

Code	Subject	L	T/P/D	C
40522	Principles of Programming Language	4	1	4
40523	Cryptography and Network Security	3	1	4
40524	Object Oriented Analysis and Design	3	1	4
40525	Mobile Computing	3	1	4
40526	Data Warehousing and Data Mining	4	-	4
405A1 405A2 405A3 405A4	**Open Elective** Computer Graphics and Animation applications Software Testing Methodologies Intellectual Property Rights and Cyber Law Quantitative Aptitude and Logical Reasoning	4	1	4
40527	Data Mining Lab	-	3	2
40E07	Advanced English Communication Skills lab	-	3	2
	Total	21	12	24

IV YEAR I SEMESTER

Code	Subject	L	T/P/D	C
40528	Application Programming	4	1	4
40529	Linux Programming	4	1	4
40B02	Management Science	3	-	3
40530	Cloud Computing	3	1	4
405B1 405B2 405B3 405B4	**ELECTIVE – I** Mobile Application development Big data Analytics Machine Learning Cyber Security	3	1	4
405C1 405C2 405C3 405C4	**ELECTIVE – II** Advanced Computer Architecture Building Enterprise Applications Advanced Databases Multimedia and Rich Internet applications	3	1	4
40531	Linux Programming lab and OOAD Lab	-	3	2
40532	Application Programming Lab	-	3	2
	Total	20	10	28

IV YEAR II SEMESTER

Code	Subject	L	T/P/D	C
40533	Software Project Management	3	1	4
405D1 405D2 405D3 405D4	ELECTIVE – III Semantic Web and Social Networks Information Retrieval Systems Human Computer Interaction Artificial Intelligence	3	1	4
405E1 405E2 405E3 405E4	ELECTIVE – IV Ad hoc and Sensor Networks Computer Forensics Design Patterns Storage Area Networks	3	1	4
40534	Seminar	--	6	2
40535	Industry oriented Mini Project	-	-	2
40536	Project Work	--	15	10
40537	Comprehensive Viva	--	--	2
	Total	9	24	28

Note: All End Examinations (Theory and Practical) are of three hours duration.

T-Tutorial   L – Theory   P – Practical/Drawing   C – Credit

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

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

ENGLISH- I

Course Objectives:
1. To facilitate for the improvement of the language proficiency of the students in English with emphasis on Reading and writing skills.
2. To equip the students to study academic subjects more effectively using the theoretical and practical components of the English syllabus.
3. Analyzing intensive reading strategies and discussing how to distinguish between facts and opinions and draw inferences.
4. Enable the students to improve effective writing skills.
5. To develop English Language communication skills in formal and informal situations.

Unit I:
Chapters entitled 'Competition Matters' and 'Light Pollution' from **English Today**, Published by Foundation Books
Vocabulary: parts of speech
Grammar: Articles, Prepositions
Reading: Introduction to Reading Skills, reading comprehension.
Writing: Introduction to writing skills, characteristics of effective writing

Unit II:
Chapters entitled 'Key to Courage' and 'The Eternal Pilgram' from **English Today**, Published by Foundation Books
Vocabulary: formation of words, prefixes, suffixes and root words,
Grammar: Tense, aspect and concord
Reading: Skimming and Scanning
Writing: paragraph writing- use of cohesive devises

Unit III:
Chapters entitled 'The Wonders of the New Millennium' and The Lost Child' from **English Today**, Published by Foundation Books
Reading: reading for details.
Grammar: integrated exercises in error detection and correction in tenses and concord.
Vocabulary: homonyms and homophones
Writing: paragraph writing and arranging jumbled sentences into paragraphs

Unit IV:
Chapters entitled 'A Special Kind of Blessing' and 'How to avoid an Argument' from **English Today**, Published by Foundation Books
Grammar: voice – exercises
Vocabulary: phrasal verbs.
Reading: Note making
Writing: notice and circular writing

Unit V:
Chapters entitled 'Food: Family and Culture' and 'English in India Today: Some Views' from **English Today**, Published by Foundation Books
Grammar: speech- exercises,
Vocabulary: idiomatic expressions
Reading: reading for specific purposes
Writing: Letter writing- both formal and informal.
* Exercises from the texts not prescribed shall also be used for classroom tasks

Course Outcomes:
1. Usage of English Language, written and spoken.
2. Enrichment of language accuracy and fluency.
3. Gaining confidence in using flawless English language and skills for writing in real life situations..

TEXTBOOK S:
In order to improve the proficiency of the student in the acquisition of Grammar error free language, the following text and course content, divided into Five Units, is prescribed.

1. Text book English Today by K.Durga Bhavani & Co. Published by Foundation Books
For Grammar practice
2. A Work Book on English Grammar and Composition published by Tata Mac Graw –Hill , New Delhi
    2012.
3. Headway's Academic Skills-reading, writing and study skills-Level-2 student's book. Oxford publications

REFERENCE BOOKS:
1. Murphy English Grammar (Intermediate)
2. Basic English by Michael Swan
3. Practical English Grammar by Thomson & Martinet
 4. Understanding and Using English Grammar by Betty Schrampfer Azar
5. A Communicative Grammar of English by Geoffrey N. Leech
6. Practical English Usage by Michael Swan
7. Oxford Word Skills Basic by Ruth Gairns
8. Improve Your Written English by Marion Field
9. A Student's Introduction to English Grammar (South Asian Edition) 1st Edition by Author: Rodney
Huddleston, Geoffrey K. Pullum
10. Essential English Grammar: A Self-Study Reference and Practice Book for Intermediate   Students of
English with Answers 2nd Edition by Murphy
11. Better English Revised Edition 1st Edition by Norman Lewis
12. Learn English: A Fun Book of Functional Language, Grammar, and Vocabulary 1st Edition
(Paperback) by Santanu Sinha Chaudhuri, Tata McGraw Hill Education
13. OXFORD GUIDE TO ENGLISH GRAMMAR 1st Edition by John Eastwod
14. How to Write Correct English (Applied English Grammar) by Rajendra Prasad Sinha
15. Collins Easy Learning Grammar & Punctuation by HarperCollins
16. Vocabulary word power made easy by Norman Lewis

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

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

ENGINEERING PHYSICS – I

Course Objectives:
1. To teach the students classification of materials based on the arrangement of atoms, basic concepts of crystallography.
2. To make the students learn the concepts of defects in crystals.
3. To make the students understand the concept of SHM, and different kinds of oscillations.
4. To teach the students the concept of dual nature of matter and experimental support to this concept
5. To expose the students to classical free electron theory and quantum free electron theory and their drawbacks.
6. To teach the students the Band theory and classification of materials based on band theory.
7. To make the students understand the concepts of Fermi level and charge carrier concentrations in semi conductors.
8. To make the students get acquainted with the p n junction diode and its characteristics.
9. To teach the basics of Electromagnetic theory.

UNIT I:
Crystallography and Crystal Structures: Classification of materials – Crystalline, Amorphous, Poly crystalline; Lattice point, Space Lattice, Basis, Crystal structure, Unit Cell, Crystallographic axes, Lattice Parameters; Crystal Systems – Bravais Lattices; Atomic Radius, Co-ordination Number and Packing Factor of SC, BCC, FCC and Diamond structures; Crystal Planes and Directions - Miller Indices, Expression for interplanar distance in cubic system
Defects in Crystals: Defects and their classification; Point Defects – Vacancies, Interstitial, Impurities, Electronic defects; Qualitative discussion of Schottky and Frenkel defects; Qualitative treatment of line defects (Edge and Screw dislocations); Burger's Vector

UNIT II:
Oscillations: Introduction; Differential equation for S.H.M. and its solution; velocity and acceleration; expression for period and frequency; graphs of displacement, velocity and acceleration; energy of the simple oscillator; Damped oscillations – under damping, critical damping and over damping; Qualitative treatment of Forced vibrations; sharpness of resonance, Qualitative treatment of electrical oscillator circuit containing inductor, capacitor and resistor

UNIT III:
Principles of Quantum Mechanics:Waves and Particles - de Broglie's concept of Matter Waves; Davisson and Germer's experiment; G.P.Thomson's experiment. Heisenberg's Uncertainty Principle; Schrödinger's Time Independent Wave Equation - Physical Significance of the Wave Function; Energy of a particle in a one dimensional infinite potential well.
Band Theory of Solids: Qualitative discussion of Classical free electron theory; Expression for electrical conductivity of metals; Qualitative discussion of Quantum free electron theory; Electron in a periodic Potential (Bloch Theorem), Kronig-Penny Model (Qualitative Treatment), Origin of energy Band formation in solids, Classification of materials into Conductors, Semi Conductors & Insulators, Concept of effective mass of an electron

UNIT IV:
Semiconductor Physics: Introduction, Classification of Semiconductors; Formation of p type and n type materials; Charge carrier concentration in Intrinsic semiconductors; Qualitative treatment of charge carrier concentration in Extrinsic semiconductors; Qualitative treatment of Fermi Level in Intrinsic and Extrinsic Semiconductors; Direct & Indirect Band Gap Semiconductors; Hall Effect; formation of p n junction diode; forward bias and reverse bias, I-V characteristics of pn junction diode; Zener Break down, Avalanche Break down

UNIT V:
Electro Magnetic Theory:
Scalar and Vector fields, Gradient of Scalar field and its physical significance; Divergence and Curl of Vector field; Ampere's Law, Faraday's Law of electromagnetic induction; Induced E.M.F. in a conductor; Lenz's Law, Displacement current, Maxwell equations in differential and integral form, wave equation .

<u>**Course Outcomes:**</u>

Students shall learn the classification of materials into three categories. With an emphasis on Crystals, they shall learn the concepts of unit cell and Bravais lattices and evaluation of packing factors for different cubic structures and diamond structure.

1. Students shall learn in detail about various point defects like Vacancies, interstitials etc and extend their understanding up to one dimensional defect like Edge and screw dislocations.
2. Student shall understand and appreciate the physics behind the mathematical equations that govern free oscillations, damped oscillations and forced oscillations. Also they shall understand the concept of resonance
3. Students shall get introduced to the fascinating world of quantum mechanics with the basic and key concepts like de Broglie's concept of matter waves and the experimental support given by Davisson and Germer and G.P.Thomson and learn to solve the Particle in one dimensional infinite potential well problem.
4. Students shall learn the Kronig – Penney model which gives rise to Band theory of solids. Also they understand the concept of effective mass of electron.
5. Students shall learn the mathematical treatment of charge carrier concentration in intrinsic and extrinsic semi conductors. Also they shall learn a very interesting phenomenon called Hall Effect and its applications besides learning pn junction diode, its characteristics and the associated breakdown mechanisms.
6. They shall be able to understand the Faraday's laws of electromagnetism and get introduced to Maxwell's equations.

TEXT BOOKS:
1. Modern Engineering Physics by K. Vijaya Kumar, S. Chandralingam: S. Chand & Co.Ltd
2. Engineering Physics – P.K.Palanisamy - SciTech Publications Pvt. Ltd., 5th Print 2008.
3. Applied Physics – S.O. Pillai & Sivakami-New Age International (P) Ltd., 2nd Edition 2008.
4. Unified Physics Vol – I by S L Gupta and Sanjeev Gupta JNPN Publications.
5. Engineering Physics by B K Panedy, S Chaturvedi, Cengage learning

REFERENCE BOOKS:
1. Solid State Physics – M. Armugam (Anuradha Publications).
2. A Text Book of Engg Physics – M. N. Avadhanulu & P. G. Khsirsagar– S. Chand & Co. (for acoustics).
3. Introduction to Solid State Physics – C. Kittel (Wiley Eastern).
4. Basic Electronics and Linear Circuits by D C Kulshreshtha, S C Gupta, N N Bhargava, TTTI, Chandigarh
5. Solid State Physics – A.J. Dekker (Macmillan).
6. Applied Physics – T. Bhima Shankaram & G. Prasad (B.S. Publications, Third Edition 2008).
7. A text book of Engineering Physics – S.P. Basvaraju – Subhas store
8. Electricity and magnetism by Edward Purcell – Berkeley series vol 2
9. Physics Vol 2 – Resnick, Halliday & Krane – Fifth edition, Wiley Student edition.
10.Physics – B.Sc. First Year by Dr B Sanjeeva Rao, et al, Telugu Akademi

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

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

ENGINEERING CHEMISTRY – I

Course objectives:

To make the students to understand the basic concepts of chemistry to develop futuristic materials for high-tech application in the area of engineering.

1. Explore the economically viable technologies developed for utilizing water resources and recycle them. To provide basic skills in chemical analysis of water and materials.
2. Study of chemistry of portable energy storage devices like various conventional as well as modern batteries and their usage in different aspects of life.
3. Gain the knowledge of corrosion science and anti corrosive techniques to protect faster corrosion and monitoring of corrosion.
4. To predict and control properties through an understanding of atomic, molecular, crystalline and microscopic structures of engineering materials.

UNIT I:
Water technology I :
Hardness of Water: Causes of hardness, expression of hardness – units – types of hardness, estimation of temporary & permanent hardness of water by EDTA method - numerical problems. Boiler troubles – Scale & sludges, Priming and foaming, caustic enbrittlement and boiler corrosion; Treatment of boiler feed water – Internal treatment (Phosphate, Colloidal, carbonate and calgon conditioning) .

UNIT II:
Water technology II:
External treatment – Lime Soda process, Zeolite process and ion exchange process. Numerical Problems. Potable Water- Its Specifications – Steps involved in treatment of potable water – Disinfection of water by chlorination and ozonisation. Reverse osmosis, Electro dialysis and their significance.

UNIT III:
Electrochemistry: Electro Chemical Cells: EMF: Galvanic Cells, types of Electrodes – (Calomel, Quinhydrone and glass electrodes); Nernst equation and its applications ; concentration cells; classification with examples, electro chemical series, Potentiometric titrations, determination of p^H using glass electrode-Numerical problems. Batteries: Primary cells (dry cells) and secondary cells (lead-Acid cell, Ni-Cd cell). Applications of batteries. Fuel cells – Hydrogen – Oxygen fuel cell; Advantages and Applications.

UNIT IV:
Corrosion and its control: Causes and effects of corrosion; Theories of corrosion – Chemical & Electrochemical corrosion; Types of corrosion (Galvanic, Water line, Pitting and Inter granular); Factors affecting rate of corrosion – Nature of metal and Nature of Environment – Corrosion control methods – Cathodic protection (sacrificial anodic and impressed current). Surface coatings: Metallic coatings & methods of application of metallic coatings - hot dipping (galvanization & tinning), Cementation, cladding, electroplating (copper plating) Electro less plating (Ni plating**).**

UNIT V:
Material chemistry: Lubricants: Classification with examples- Characteristics of a good lubricant & properties of lubricants: viscosity, Cloud point, flash and fire points. **Refractories**: Classification, characteristics of a good refractory and applications. **Nanomaterials**: Introduction, preparation by sol-gel & chemical vapor deposition methods. Applications of nano materials

Course Outcomes:

1. Analyze the water samples and will have the knowledge to prepare potable water using different techniques.
2. Have concept on different batteries & fuel cells and their Applications.
3. Interpret the reasons of corrosion and will be monitor them by using the proper technique
4. Be able to apply core concepts in Materials Science to solve engineering problems.

TEXT BOOKS:

1. P. C. Jain and Monica Jain, A text Book of Engineering Chemistry, Dhanapat Rai Publications, New Delhi, 12th Edition 2006.
2. R.V. Gadag and Nithyananda Shetty, A text Book of Engineering Chemistry. I.K International publishing house. Edition 2012.

REFERENCE BOOKS:

1. F.W. Billmeyer, Text Book of Polymer Science, John Wiley & Sons, 4nd Edition, 1996.
2. M.G. Fontana, N. D. Greene, Corrosion Engineering, McGraw Hill Publications, New York, 3rd Edition, 1996.
3. Principles of Physical Chemistry B.R.Puri, L.R.Sharma & M.S.Pathania, S.Nagin Chand

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

I Year B.Tech CSE – I Sem

L   T/P/D   C
4   - / - / -   4

MATHEMATICS – I

Course Objectives:
1. Finding inverse of a matrix by elementary transformations
2. Solving system of simultaneous equations
3. Calculate the powers of the matrix & Calculate the inverse of the matrix by CHT
4. Know about the properties of the Eigen values and Vectors, Quadratic forms
5. Know the Applications of second order differential equations
6. Converts a real life problem into a differential equation

UNIT I:
Matrices and Linear systems of equations: Rank of the matrix - Elementary transformations –Echelon form - Normal form – PAQ Form - Inverse from Elementary matrices – Solution of Linear Systems – Consistency of Linear system of equations – Linear and Orthogonal Transformations –Linearly independent and dependent of vectors-LU Decomposition- LU Decomposition from Gauss Elimination –Solution of Tri-diagonal Systems

UNIT II:
Eigen Values, Eigen Vectors, Complex matrices : Eigen values, Eigen vectors – properties – Cayley-Hamilton Theorem (without Proof) - Inverse and powers of a matrix by Cayley-Hamilton theorem. Diagonolization of matrix-Calculation of powers of matrix – Modal and spectral matrices. Real matrices – Symmetric, skew – symmetric. Complex Matrices: Hermitian, Skew-Hermitian and Unitary – Eigen values and Eigen vectors of complex matrices and their properties.

UNIT III:
Quadratic forms, Ordinary Differential Equations of First Order:G^{-1} – MP inverse- Singular value decomposition Quadratic forms , Reduction of quadratic form to canonical form – Rank- Nature - index – signature of Quadratic forms.
Applications of First Order Differential Equations: Orthogonal trajectories, Newton's Law of cooling, Law of natural growth and decay.

UNIT IV:
Differential Equations of Second & Higher Order : Definitions- Complete Solutions –Rules for finding Complementary function-Particular integral (R.H.S of the type
e^{ax} , $Sin\ ax$, $Cos\ ax$, $Polynomial\ in\ x$, $e^{ax}V(x)$, $x^m v(x)$) and Method of variation of Parameters.

UNIT V:
Laplace Transforms: Definition of Laplace transform, Condition for existence –L.T. of standard functions – Properties of L.T. Transforms of Periodic function, derivatives and integrals – Multiplication by t^n - division by t -Evolution of Integrals - Inverse Transforms- Other methods of finding Inverse Transforms. Convolution theorem –Application of Laplace transforms to ordinary differential equations - Dirac's delta function – Unit step function.

Course Outcomes:
1. Applies the Theory of Matrices in solving n number of equations
2. Understands how to convert problems in engineering to differential equations
3. Understands the applications of differential equations in second and higher order
4. Understands the Newton's Law of cooling, Law of Natural growth or Decay

TEXT BOOKS:
1. Mathematical Methods of Science and Engineering by Kanti B.Datta ,Cengage Learning
2. Higher Engineering Mathematics by B.S. Grewal, Khanna Publishers.
3. Introduction to Matrix Analysis by Richard Bellman, Dover Publications
4. Differential Equations by Shepley L Ross, Wiley Publications
REFERENCE BOOKS:
1. Advanced engineering Mathematics by Kreyszig, John Wiley & Sons Publishers.
2. Advanced Engineering Mathematics by R.K. Jain&S.R.K. Iyengar,3rd edition, Narosa Publishing House, Delhi.
3. Engineering Mathematics – I by T.K. V. Iyengar, B. Krishna Gandhi & Others, S. Chand.
4. Engineering Mathematics – I by D. S. Chandrasekhar, Prism Books Pvt. Ltd.
5. Engineering Mathematics – I by G. Shanker Rao & Others I.K. International Publications.
6. Advanced Engineering Mathematics with MATLAB, Dean G. Duffy, 3rd Edi, CRC Press ,Taylor & Francis Group.
7. Mathematics for Engineers and Scientists, Alan Jeffrey, 6ht Edi, 2013, Chapman & Hall/ CRC
8. Advanced Engineering Mathematics, Michael Greenberg, Second Edition. Pearson Education.

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

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

COMPUTER PROGRAMMING

Course objectives

1. Learn how to write modular, efficient and readable C programs
2. Declare and manipulate single and multi-dimensional arrays of the C data types.
3. Describe the techniques for creating program modules in C using functions and recursive functions.
4. Create and manage derived data types and perform operations on files.
5. Utilize pointers and dynamic memory allocation functions to efficiently solve problems.
6. To provide an overview on current technologies in Software Industry like Open Source-LINUX and PHP.

UNIT I: Computer fundamentals-Hardware, Software, Programming languages, Translators, Overview of Operating System, Program Development steps-Algorithm, Flow chart; Number Systems,
Introduction to C Language – History, Simple C Program, Identifiers, Basic data types, User defined data types, Variables, Constants, Type qualifiers, Managing Input / Output, Operators, Precedence and Associativity, Expression Evaluation, Type conversions, Simple C Programming examples.

UNIT II: Conditional Statements – if and switch statements, Loop Control Statements – while, for, do-while statements, C Programming examples, Other statements related to control statements – break, continue, goto, C Programming examples.
Arrays– Basic concepts, One-dimensional arrays, Two–dimensional arrays, Multi-dimensional arrays, C programming examples.

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

UNIT III: Introduction to Structured Programming- Functions- Basics, User defined functions, Inter function communication, Standard functions, Storage Classes-auto, register, static, extern, Scope rules, Array and string manipulations using functions, Recursive functions, C programming examples.
Derived types – Structures – Basic concepts, Nested structures, Arrays of structures, Structure manipulations using functions, Unions, bit fields, C programming examples.

UNIT IV: Pointers – Basic concepts, Pointer arithmetic, Pointers and functions, Pointers and strings, Pointers and arrays, Pointers and structures, Self-referential structures, C programming examples.
Preprocessor Directives-include, define, etc., Dynamic Memory Allocation.

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

UNIT V: Open Source: Introduction to Open Standard, Open Standards Model, Standards and Applications, Open Source Software and Technology.
Linux: History, Properties, Flavors, Introduction to file system, Basic commands and shell programming, Execution of c programs.
PHP: - History, Features of PHP, Key Driver of LAMP Stack, PHP Deployment Platform – Sample web site using PHP.

Course Outcomes:
Upon completion of the course, the students are expected to:
1. Write, compile and debug programs in C language.
2. Use different data types in a computer program.
3. Design programs involving decision structures, loops, arrays and functions.
4. Explain the difference between call-by-value and call-by-reference
5. Understand the dynamic allocation of memory by using pointers.
6. Use different file operations to create/update basic data files.
7. Use the basic commands of Linux
8. Able to create basic web pages using PHP Deployment

TEXT BOOKS:

1. Programming in C by Pradip Dey, Manas Ghosh – Second Edition, Oxford University Press.
2. C programming: A Problem-Solving Approach by Behrouz A. Forouzan, E.V.Prasad, Richard F.Gilberg – First Edition, Cengage Learning Press
3. C How to Program by Paul Deitel and Harvey Deitel – Seventh Edition, PH.
4. C Programming and Data Structures by E Balagurusamy, Second Edition, Tata McGraw Hill.
5. Introduction to Linux-A Beginner's Guide by Machtelt Garrels
6. Beginning PHP 5.3, by Matt Doyle, SPD/Wrox Press-2011

REFERENCES:

1. The C Programming Language by Brian W. Kernighan, Dennis M. Ritchie – Second Edition, PH.
2. C Programming: Absolute beginner's guide by Greg Perry and Dean Miller, Third Edition, QUE Publishers.
3. Let Us C by Yashwant Kanetkar – Fifth Edition, BPB Publications.

MALLA REDDY ENGINEERING COLLEGE
(Autonomous)
(Common for all branches)

I Year B.Tech I-sem.   L   T/P/D   C
                                                           2   1/-/3   4

ENGINEERING DRAWING – I

Pre-requisite: Knowledge in Mathematics

Course Objective:

- The objective of this subject is to provide the basic concepts in projections, technical drawing, dimensioning and specifications.

UNIT – I

Introduction To Engineering Drawing: Principles of Engineering Drawing/Graphics – Various Drawing Instruments – Conventions in Drawing –

Lettering Practice – BIS Conventions.

Curves: Constructions of Curves used in Engineering Practice:

   a) Conic Sections **-** Construction of ellipse, parabola by different methods and hyperbola by general method.

   b) Cycloid, Epicycloid and Hypocycloid

   c) Involute - circle, polygon.

Tangent and normal for all the curves(a, b & c)

UNIT – II

Orthographic Projections in First Angle

Projection: Principles of Orthographic Projections – Conventions – First Angle projections.

Projections of Points.-Including Points in all four quadrants.

Projections of Lines - Parallel, perpendicular, inclined to one plane and inclined to both planes. True length and true angle and traces of a line.

UNIT – III

Projections of Planes: Plane parallel, perpendicular and inclined to one reference plane. Plane inclined to both the reference planes.

UNIT – IV

Projections of Solids: Projections of regular solids, cube, prisms, pyramids, tetrahedron, cylinder and cone, axis inclined to one and both the planes.

UNIT – V

Isometric Projections : Principles of Isometric Projection – Isometric Scale – Isometric Views– Conventions – Plane Figures, Simple and Compound Solids – Isometric Projection of objects having non- isometric lines. Isometric Projection of parts with Spherical surface.

Transformation of Projections: Conversion of Isometric Views to Orthographic Views. Conversion of orthographic views to isometric views – simple objects.

TEXT BOOKS:

1. Engineering Drawing, N.D. Bhat / Charotar Publications
2. Engineering Drawing - Basant Agrawal, TMH

REFERENCES:

1. Engineering Drawing - P.J. Shah/S.Chand Publications
2. Engineering Drawing, Narayana and Kannaiah / Scitech publishers.
3. Engineering Drawing- Johle/Tata Macgraw Hill.
4. Computer Aided Engineering Drawing- Trymbaka Murthy- I.K. international.
5. Engineering Drawing – Grower Publications
6. Engineering Drawing , Venugopal / New age Publications

Course Outcome:

- At the end of learning this course the student shall be able to interpret the drawing commonly used in Engineering practice and manufacturing drawing.

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

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

COMPUTER PROGRAMMING LAB

Course objectives:

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

Week l:
Practice various DOS internal and external commands.

Week 2:

     a) Practice various Menu items and debugging techniques in IDE.
     b) Practicing sample C programs using Conversion specification.
     c) Implement various programs logics using algorithms and flowcharts.

Week 3:
     a) Write a C program to find smallest and largest of given three numbers.
     b) Write a C program to find the roots of a quadratic equation.
     c) Write a C program to implement basic arithmetic operations.

Week 4:
     a) Write a C program to find the sum of individual digits of a positive integer.
     b) A Fibonacci sequence is defined as follows: the first and second terms in the sequence are 0 and 1. Subsequent terms are found by adding the preceding two terms in the sequence. Write a C program to generate the first n terms of the sequence.
     c) Write a C program to find whether the given number is palindrome, perfect, Armstrong or strong.
     d) Write a C program to generate all the prime numbers between n1 and n2, where n1 and n2 are values supplied by the user.

Week 5:
Write C programs that use both recursive and non-recursive functions
     a) To find the factorial of a given integer.
     b) To find the GCD (greatest common divisor) of two given integers.

Week 6:
a) Write a C program to find both the largest and smallest number in a list of integers.
b) Write a C program that uses functions to perform the following:
     i) Addition of Two Matrices
     ii) Multiplication of Two Matrices

Week 7:
a) Write a C program that uses functions to perform the following operations:
     i) To insert a sub-string in to given main string from a given position.
     ii) To delete n Characters from a given position in a given string.
b) Write a C program to determine if the given string is a palindrome or not
c) Write a C program to find substring in a given string.
d) Write a C program to count the lines, words and characters in a given text.

Week 8:
a) Write a C program to construct a pyramid of numbers.
b) Write a C program to generate Pascal's triangle.

Week 9:

Write a C program to read in two numbers, x and n, and then compute the sum of this geometric progression:
$1+x+x^2+x^3+\ldots\ldots\ldots + x^n$

For example: if n is 3 and x is 5, then the program computes 1+5+25+125. Print x, n, the sum

Perform error checking. For example, the formula does not make sense for negative exponents – if n is less than 0. Have your program print an error message if n<0, then go back and read in the next pair of numbers of without computing the sum. Are any values of x also illegal? If so, test for them too.

Week 10:

a) 2's complement of a number is obtained by scanning it from right to left and complementing all the bits after the first appearance of a 1. Thus 2's complement of 11100 is 00100. Write a C program to find the 2's complement of a binary number.

b) Write a C program to convert a Roman numeral to its decimal equivalent.

Week 11:

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

b) Write a C program to find grades of a student's using structures and unions.

Week 12:

a) Write a C program which copies one file to another.

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

Week 13:

a) Practicing basic LINUX commands

b) Write simple shell programs

Week 14:

Develop a sample web Pages using PHP

<u>Course Outcomes:</u>

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

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

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

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

ENGINEERING PHYSICS LAB

Course Objectives:
1. To motivate the student to gain experimental skills, working with various measuring instruments.
2. To learn the basic circuit designing concepts.

Experiments:
*Any Ten experiments compulsory

1. Dispersion of Light –Dispersive power of material of a given glass and calcite prism
2. Diffraction grating – Determination of the wavelength of a Sodium vapour lamp.
3. Newton's Rings – Radius of curvature of Plano convex lens
4. Melde's Experiment – Longitudinal and Transverse modes
5. Study of RC time constant and RL circuit.
6. The series RLC circuit – determination of resonant frequency, bandwidth and quality factor.
7. Magnetic field along the axis of current carrying circular coil- Stewart and Gee's experiment.
8. LASER- Diffraction due to single slit and double slit.
9. Evaluation of Numerical aperture of the given fiber.
10. Energy band –gap of a material of a P-N junction diode.
11. Torsional Pendulum- Determination of Rigidity modulus of two different wires.
12. Sonometer- Frequency of A.C supply
13. LASER diode – I-V characteristics.
14. Michelson interferometer (Demonstration only)
15. Hall Sensor (Demonstration only)

Course Outcomes:
1. Various experiments related to Optics, Mechanics, Electrical and Electronics areas help the student understand the subtle concepts in a practical way.
2. Also the labs sessions inculcate the sense of team work.
3. Working with various measuring instruments help the student gain experimental skills.
4. Interpretation and analysis of data are also learnt by the student.

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

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

ENGINEERING & IT WORKSHOP
(Common for all branches)

ENGINEERING WORKSHOP

Course Objective:

To provide the basic concepts about tools used in different trades like Fitting, Carpentry, House wiring, Tin smithy etc in Engineering Workshop.

1. TRADES FOR EXERCISES:
At least two exercises from each trade:
1. Carpentry
2. Fitting
3. Tin-Smithy and Development of jobs carried out and soldering.
4. House-wiring.
5. Foundry.

Course Outcome:

The students shall be capable to do house wiring, tinsmith, fitting, foundry, carpentry and do some maintenance of wooden furniture. This subject/ practice keep the students a habit of life-long learning

TEXT BOOKS:
1. Work Shop Manual – P. Kanniah/ K. L. Narayana, Scitech Publishers.
2. Work Shop Manual by Venkat Reddy/B.S. Publications
3. Work Shop Practice Manual by K. Venkat Reddy,/B.S. Publications

IT WORKSHOP

Course Objectives:

1. To study/demonstrate the concepts of computer w.r.t. its hardware, operating system, assembling and disassembling.
2. To conduct the experiments related to IT Workshop, installations

List of Tasks:
1. Computer Hardware: Identification of Peripherals
2. Assembling and disassembling of a PC
3. Simple diagnostic exercises – Related to hardware
4. Installation of Windows Operating System
5. Installation of Linux Operating System
6. Simple diagnostic exercises –Related to Operating System
7. Design the applications using following features of MS Word
   a) Letter
   b) Header and footer
   c) Hyperlink, Bullets and numbering
   d) Inserting various objects
   e) Spelling and grammar checking
   f) Tables
   g) Mail merge
9. Design the applications using following features of MS Excel
   a) Formulas
   b) Functions
   c) Conditional formatting
   d) Sorting
   e) Filters
10. Design the applications using following features of MS Powerpoint
    a) Design Templates
    b) Layouts
    c) Inserting Objects
    d) Custom Animation
    e) Macros
11. Designing the same applications(8,9 & 10) using Open Office.

Course Outcomes:

Students will be able to:

1. Identify, assemble, dissemble, install and
2. Write commands for a given configuration of a computer.
3. Familiarizes with MS Word, Excel, Power Point and Open Office.

TEXTBOOKS:

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

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

I Year B.Tech CSE – II Sem   **L   T/P/D   C**
                                                                                 3   2 / - / -   4

ENGLISH &PROFESSIONAL ETHICS

Introduction:

There is an increasing concern over the English language competency of Engineering students based on their academic and professional performance. The transformation and the mistreatment of language in the social networking over the last decade have greatly affected the language skills of the students. In keeping with the language skill deficiencies, the present syllabus is designed to hone not only the traditional LSRW skills but also their analytical skills that enable to think too in English. This effective approach to develop English Language competency among the Engineering students aims to kindle the thinking skills to communicate effectively. The classroom activities based on the textbook may be used to build confidence among the students as they become active participants and teachers taking the role of a facilitator.

In the English classes, the focus is on the grammar, vocabulary, reading and, writing. For this the teachers should use the text prescribed for detailed study. For example, the students should be encouraged to read the texts/selected paragraphs silently. The teachers can ask comprehension questions to stimulate discussion and based on the discussions students can be made to write short paragraphs/essays etc. The focus is on language error detection as well as correction along with honing vocabulary, reading skills, and writing skills.

The text is for extensive reading/reading for pleasure. Hence, it is suggested that they read it on their own the topics selected for discussion in the class. The time should be utilized for working out the exercises given after each section, as also for supplementing the exercises with authentic materials of a similar kind for example, from newspaper articles, advertisements, promotional material etc.. However, the stress in this syllabus is on skill development, fostering ideas and practice of language skills.

This course also has a few elements on professional ethics and human values. It helps the students know their responsibility towards the society and instills in students, a sense of respect towards harnessing values of life and spirit of fulfilling social responsibilities

Course Objectives:

1. To facilitate for the improvement of the language proficiency of the students in English with emphasis on Reading and writing skills.
2. To equip the students to study academic subjects more effectively using the theoretical and practical components of the English syllabus.
3. Analyzing intensive reading strategies and discussing how to distinguish between facts and opinions and draw inferences.
4. Enable the students to improve effective writing skills.
5. To develop English Language communication skills in formal and informal situations.
6. To create an awareness on Engineering Ethics and Human Values.
7. To understand social responsibility of an engineer.
8. To appreciate ethical dilemma while discharging duties in professional life.
9. To mould the students to the needs of the world.

Reading Skills:
Objectives

1. To develop an awareness in the students about the significance of silent reading and comprehension.
2. To develop the ability of students to guess the meanings of words from context and grasp the overall Message of the text, draw inferences etc.
• Skimming the text
• Understanding the gist of an argument
• Identifying the topic sentence
• Inferring lexical and contextual meaning
• Understanding discourse features
• Scanning
• Recognizing coherence/sequencing of sentences

NOTE: The students will be trained in reading skills using the prescribed text for detailed study. They will be examined in reading and answering questions using 'unseen' passages which may be taken from authentic texts, such as magazines/newspaper articles.

Writing Skills:
Objectives

1. To develop an awareness in the students about writing as an exact and formal skill
2. To equip them with the components of different forms of writing, beginning with the lower order ones.
• Writing sentences
• Use of appropriate vocabulary

- Paragraph writing
- Coherence and cohesiveness
- Narration / description
- Note Making
- Formal and informal letter writing
    - Circular writing
    - Memo writing
    - Report writing

UNIT I:
Chapters entitled "The Dream and the Message" and "Give Us a Role Model" from Ignited **Minds** by A.P.J. Abdul Kalam, Penguin Books.
Vocabulary: synonyms and antonyms.
Grammar: question tags, exercises related to questions.
Reading: Intensive Reading and Extensive Reading.
Writing: essay writing.

UNIT II:
Chapters entitled "Visionary Teachers and Scientists" and "Learning from Saints and Seers" from **Ignited Minds** by A.P.J. Abdul Kalam, penguin Books.
Vocabulary: words often confused, idioms and phrases
Grammar: degrees of comparison- exercises.
Reading**:** Reading for themes and gists
Writing: summarizing

UNIT III:
Chapters entitled "Patriotism beyond Politics and Religion" and "The Knowledge Society" from Ignited **Minds** by A.P.J. Abdul Kalam, , Penguin Books.
Grammar: types of sentences, transformation of sentences- simple , complex and compound sentences.
Vocabulary: one word substitutions.
Reading: reading for interpretation
Writing. Writing instructions

UNIT IV:
Chapters entitled "Getting the Forces Together" and "Building a New State" from **Ignited Minds** by A.P.J. Abdul Kalam, , Penguin Books.
Grammar: Conditionals- exercises.
Vocabulary: e-register, foreign expressions.
Reading: critical reading.
Writing: memo writing, review writing

UNIT V:
Chapter entitled "To My Countrymen" from **Ignited Minds** by A.P.J. Abdul Kalam, , Penguin Books.
Grammar: Common errors and integrated exercises.
Vocabulary: gender sensitive language, integrated exercises in vocabulary.
Reading: survey, question, read, recall and review.
Writing - Note-making, Report writing, types of reports

UNIT VI: Introduction to Engineering Ethics- Definition; Purpose of studying Ethics in Engineering. Engineers as Social Experimenters and Safety Officers, Learning from the past, Knowledge   gained, Responsible Experimenters, Accountability, Assessment of Safety and Risk, Risk benefit analyses and reducing risk.
    - Field work could be assigned to the students- interaction with the "real" Safety Officers

UNIT VII:
Responsibilities to Employers, Respect for Authority, confidentiality; conflicts of interest-Impairment of Judgment & Service, Gifts & Bribes, Moral Status; Occupational crime, Antidiscrimination Laws, Sexual harassment, Global Issues; Engineers- Leaders, Environmental/ Bio ethics, Computer Ethics, Hacking, Cyber Crime, Engineers as Managers, Moral Leadership
    - Field work could be assigned – take up a role of a leader and work on any issue.

*unit VI&VII are to be tested only for internal evaluation. They are not meant for end semester examination.
*midterm I will cover unit1-3, midterm II will cover unit4-7.
* project based on field work in teams will carry 5marks.

Course Outcomes:
1. Usage of English Language, written and spoken.
2. Enrichment of comprehension and fluency
3. Improving effective writing skills in personal and professional life.
4. The learners recognize ethical responsibilities of engineers and suggest ways to deal with ethical issues in engineering.
5. The learners can reach an ethically justified or morally reasoned practical solution to an ethical problem with an appropriate plan of action.

TEXT BOOKS:
1. Ignited Minds by A. P. J. Abdul Kalam, Penguin Books.
2. Ethics in Engineering by Mike Martin and Roland Schinzinger , McGraw-Hill.

REFERENCE BOOKS:
1. Sharon J. Gerson Steve M. Gerson, "Technical Writing", New Delhi, Pearson education
2. Professional Report Writing by Simon Mort
3. Cambridge English for Engineering : Student's Book, Mark Ibbotson , PB + 2 ACD, ISBN:
4. English for Engineers, Regional Institute of English; Bangalore, PB + CD - ROM, ISBN:
5. Resonance: English for Engineers and Technologists, Dr. K. Elango; Dr. Veena Selvam; Dr. P. R. Sujatha Priyadarshini,
6. A Course in Communication Skills, P Kiranmai Dutt ; Geetha Rajeevan ; C.L.N. Prakash , PB
7. Developing Language and Communication Skills through Effective Small Group Work : SPIRALS: From 3-
8, Marion Nash ; Jackie Lowe ; Tracey Palmer , PB
8. Technical Report Writing Today by Daniel G Reordan
9.Comprehension Connections: Bridges to Strategic Reading by Tanny McGregor
10. Keys to Comprehension: How to Help Your Kids Read It and Get It! By Susan Zimmermann
11.Deeper Reading by Kelly Gallagher
12.Notice and Note: Strategies for Close Reading by Kylene Beers
13.Cambridge English Skills Real Reading 3 with Answers by Liz Driscoll
14.Inferences & Drawing Conclusions: 35 Reading Passages for Comprehension by Linda Ward Beech

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

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

ENGINEERING PHYSICS – II

Course Objectives:
1. To teach the students the phenomenon of Interference, Diffraction and Polarization.
2. To make the students aware of X – ray diffraction and different techniques of it.
3. To make the students understand the characteristics of LASER, different working LASERs.
4. To teach various applications of LASERs.
5. To teach the students, basic definitions related to Dielectric materials, different kinds of polarization, and different Dielectric materials.
6. To introduce them the phenomenon of superconductivity and its applications.
7. To teach the students the significance of nano size and its fascinating applications.
8. To teach the students working principle of optical fiber, classification of optical fibers and applications of optical fibers.
9. To teach the production and detection of ultrasonics and their applications.

UNIT I:
Optics: Introduction to Interference, Young's double slit experiment (Qualitative) – Optical path difference and Fringe width – Interference in thin films (Reflected light) Cosine law – Newton's rings experiment – Determination of wavelength of light. Basic Principles of X – ray diffraction - Bragg's Law, Bragg's X-Ray Spectrometer. Laue Method, Powder Method. Introduction to Polarization, Polarization of Light, Plane of Polarization, Double Refraction, Nicols's prism.

UNIT II:
Laser: Characteristics of LASER; Absorption, Spontaneous and Stimulated transitions; Einstein's Coefficients and Relations between them; Population Inversion; Pumping – Optical and Electrical; Meta-stable State; Three and Four level pumping schemes; Ruby LASER; Helium-Neon LASER; Semiconductor Diode LASER; Applications of LASER – Data storage, Medical, Scientific and industrial

UNIT III:
Dielectric Properties: Electric Dipole, Dipole Moment, Dielectric Constant, Polarizability, Electric Susceptibility, Displacement Vector; Electronic, Ionic and Orientation Polarizations; Expressions for electronic and ionic Polarizabilities; Qualitative treatment of Internal Field in dielectrics; Clausius - Mossotti Equation; Piezo-electricity and Ferro- electricity
Superconductivity: Concept of Perfect Diamagnetism; Meissner effect – Magnetic levitation; Type I and II Superconductors; Applications of Superconductors

UNIT IV:
Nano Technology: Introduction, Surface to volume ratio, Quantum confinement, Change of Electrical, magnetic and optical properties with size, Synthesis of nano materials – Sol-gel method, PVD; Characterization by TEM, applications.
Fiber Optics: Principle of Optical Fiber; Acceptance angle and Acceptance cone, Numerical Aperture; Step and Graded index Optical Fibers and their Refractive Index profiles; Attenuation in Optical Fibers, Application of Optical Fibers – Medical, Level sensor and Communication system.

UNIT V:
Ultrasonics: Introduction, Production of Ultrasonic waves – Magnetostriction method, Piezo electric method; Detection of ultrasonics – Piezo electric detector, Kundt's tube, Sensitive flame method, Thermal detector; Properties of Ultrasonic waves; Applications – Communication, Industrial, Biological and medical.
Acoustics: Basic requirements of acoustically good Hall; Reverberation; Sabine's formula for Reverberation Time (Qualitative Treatment); Factors Affecting the Architectural Acoustics and their Remedies.

Course Outcomes:
1. Students get introduced to the phenomenon of interference and understand the very famous Young's double slit experiment and Newton's rings experiment.
2. They shall understand the concept of X – ray diffraction and the two techniques Laue method and Powder method.
3. Students shall understand the theory of Double refraction as far as Polarization phenomenon is concerned.
4. Students shall be able to distinguish ordinary light and LASER. They shall learn the physics behind the production of LASER.
5. They shall understand and appreciate the applications of LASER.

6. The students shall be able to distinguish Electronic, Ionic and orientation polarizations, understand the significance of the Clausius – Mossotti relation.
7. The students shall learn regarding Piezo electric materials also.
8. They shall learn Meissner effect and be able to understand the classification of superconductors into two categories.
9. They shall be able to understand and appreciate the applications of Superconductivity.
10. Students shall understand the influence of size of the material on its properties.

TEXT BOOKS:
1. Modern Engineering Physics by K. Vijaya Kumar, S. Chandralingam: S. Chand & Co.Ltd
2. Engineering Physics – P.K.Palanisamy - SciTech Publications Pvt. Ltd., 5th Print 2008.
3. Applied Physics – S.O. Pillai & Sivakami-New Age International (P) Ltd., 2nd Edition 2008.
4. Unified Physics Vol – I by S L Gupta and Sanjeev Gupta JNPN Publications.
5. Unified Physics Vol – II by S L Gupta and Sanjeev Gupta JNPN Publications.
6. Engineering Physics by B K Panedy, S Chaturvedi, Cengage learning
7. A Text book of Optics by N Subrahmanyam, Brijlal and M N Avadhanulu, S Chand & Co,

REFERENCE BOOKS:
1. Solid State Physics – M. Armugam (Anuradha Publications).
2. A Text Book of Engg Physics – M. N. Avadhanulu & P. G. Khsirsagar– S. Chand & Co. (for acoustics).
3. Introduction to Solid State Physics – C. Kittel (Wiley Eastern).
4. Engineering Physics by R K Gaur and S L Gupta, Dhanpat Rai and Sons.
5. Solid State Physics – A.J. Dekker (Macmillan).
6. Applied Physics – T. Bhima Shankaram & G. Prasad (B.S. Publications, Third Edition 2008).
7. A text book of Engineering Physics – S.P. Basvaraju – Subhas store
8. Electricity and magnetism by Edward Purcell – Berkeley series vol 2
9. Physics Vol 2 – Resnick, Halliday & Krane – Fifth edition, Wiley Student edition.

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

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

ENGINEERING CHEMISTRY– II

Course objectives:
1. Understand various techniques involved in polymerization and application of polymer technology in the area of various engineering fields and manufacturing process of important metallurgical materials.
2. Describe the fundamental aspects of colloids, surface chemistry and properties of multi-phase systems
3. Understanding how light interacts with matter and how it can be used to quantitatively understand chemical samples & engineering materials.
4. To learn about types of fuels and their characteristics, and combustion systems with emphasis on engineering applications.

UNIT I :
Polymers I: Classification of Polymers, Types of Polymerization (Chain (Free radical Mechanism) & Step growth). Plastics**:** Thermoplastic & Thermo setting resins, Compounding & fabrication of plastics (Compression and injection moulding). Preparation, properties, engineering applications of PVC, Teflon and Bakelite.Fibers**-**Characteristics of fibers – preparation, properties and uses of Nylon – 6,6 and Dacron – Fiber Reinforced Plastics (FRP) – applications.

UNIT II:
Polymers II : Rubbers – Natural rubber and its processing (vulcanization). Elastomers – Buna-s, Butyl rubber. Conducting polymers: Polyacetylene, Polyaniline, Mechanism of Conduction, doping; applications of Conducting polymers. Bio-degradable Polymers- preparation and Applications of Poly vinyl acetate and Poly lactic acid .Liquid Crystal Polymers and its Application.

UNIT III:
Photochemistry and Spectroscopy: Photochemistry: Laws of photochemistry - Grotthuss–Draper law, Stark–Einstein law and Lambert-Beer Law. Quantum efficiency – determination Spectroscopy: Electromagnetic spectrum - Absorption of radiation – Electronic, Vibrational and rotational transitions. UV-visible spectroscopy – principles, instrumentation and Applications (Block diagram only).

UNIT IV:
Phase rule & Surface chemistry: Phase Rule**:** Definition of terms: Phase, component, degree of freedom, phase rule equation. Phase diagrams –one component system- water system. Two component system Lead-Silver System. Adsorption: Types of Adsorption, Isotherms – Freundlich and Langmuir adsorption isotherm, applications of adsorption. Colloids: Classification of Colloids; Electrical & optical properties, micelles, applications of colloids in industry.

UNIT V:
Fuels & Combustion: Fuels – Classification – solid fuels: coal – analysis of coal - proximate and ultimate analysis and their significance. Liquid fuels – petroleum and its refining – cracking – types – fixed bed catalytic cracking. Knocking – octane and cetane rating, synthetic petrol, Fischer-Tropsch's process: Gaseous fuels - constituents, characteristics and applications of natural gas, LPG and CNG. Analysis of flue gas by Orsat's apparatus.
Combustion: Definition, Calorific value of fuel – HCV, LCV; Determination of calorific value by Junker's gas calorimeter – Numerical problems on combustion.

Course Outcomes:
1. Demonstrate general knowledge and understanding concerning properties and use of polymeric materials, including knowledge and understanding of related environmental aspects.
2. The student will obtain an understanding of interactions between surfaces and gases, liquids or solutions, and how interfaces are important in many technological and biological processes.
3. Use of spectroscopy to characterize organic compounds. Students will use spectroscopic data to make meaningful observations about the chemical properties of compounds.
4. Understand and analyze the combustion mechanisms of various fuels

TEXT BOOKS:
1. Engineering Chemistry by R.P. Mani,K.N. Mishra, B. Rama Devi /CENGAGE learning.
2. Engineering Chemistry by P.C Jain & Monica Jain, Dhanpatrai Publishing Company (2008).

REFERENCE BOOKS:
1. Engineering Chemistry by B. Siva Shankar Mc.Graw Hill Publishing Company Limited, New Delhi (2006)
2. Engineering Chemistry J.C. Kuriacase & J. Rajaram, Tata McGraw Hills Publishing Company Limited, New Delhi (2004).
3. Text Book of Engineering Chemistry by S.S. Dara & Mukkati S. Chand & Co Publishers, New Delhi(2006)
4. Chemistry of Engineering Materials by CV Agarwal,C.P Murthy, A.Naidu, BS Publications

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

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

MATHEMATICS – II

Course Objectives:

1. In engineering applications, data collected from the field are usually discrete and the physical meanings of the data are not always well known. To estimate the outcomes and, eventually, to have a better understanding of the physical phenomenon, a more analytically controllable function that fits the field data is desirable.

2. The process of estimating the outcomes in between sampled data points is called interpolation; whereas the process of estimating the outcomes beyond the range covered by the existing data is called extrapolation.

3. Understand the Rolles' theorem using intermediate value theorem ,Mean using Lagrange Mean Value theorem ,Cauchy Mean value theorem

4. Understand the beta function and relation between beta and gamma functions, Applications of beta, gamma functions in finding areas etc.,Applications of integration in Cartesian, Parametric & Polar co-ordinates ,Evaluation of double integrals,Evaluation of triple integrals.

5. Vector calculus studies various differential operators defined on scalar or vector fields, which are typically expressed in terms of the Del operator (∇), also known as "nabla". The five most important differential operations in vector calculus are: (a) Grad   (b) Div (c) Curl (d) Vector Laplacian (e) Laplacian. , Green's theorem is mostly used to solve two-dimensional flow integrals, stating that the sum of fluid outflows at any point inside a volume is equal to the total outflow summed about an enclosing area. In plane geometry, and in particular, area surveying.

6. Green's theorem can be used to determine the area and centroid of plane figures solely by integrating over the perimeter. In vector calculus, the divergence theorem, also known as Gauss's theorem or Ostrogradsky's theorem, is a result that relates the flow (that is, flux) of a vector field through a surface to the behavior of the vector field inside the surface.

UNIT I:
Differential Calculus: Rolle's Theorem – Lagrange's Mean Value Theorem – Cauchy's mean value Theorem – Generalized Mean Value theorem. **Differentiability of multivariable functions**: Jacobian - Functional dependence - Maxima and Minima of functions of two variables with constraints and without constraints (Lagrange's method of multipliers).

UNIT II:
Interpolation: Introduction- Errors in Polynomial Interpolation – Finite differences- Forward Differences- Backward differences –Central differences – Symbolic relations and separation of symbols- Difference Equations - Differences of a polynomial-Newton's formulae for interpolation – Central difference interpolation Formulae – Gauss Central Difference Formulae –Interpolation with unevenly spaced points-Lagrange's Interpolation formula.

UNIT III:
Solution of Non- linear Systems, Special Functions: Introduction, Solution of Algebraic and Transcendental Equations, The Bisection Method – The Method of False Position – The Iteration Method – Newton-Raphson Method.Beta and Gamma Functions: Relation between them, their properties – evaluation of improper integrals using Gamma / Beta functions

UNIT IV:
Multiple Integrals: Multiple integrals - double and triple integrals – change of variables – change of order of integration – Finding Surface areas, volumes.

UNIT V:
Vector Calculus: Gradient- Divergence- Curl and their related properties of sums- products- Laplacian and second order operators. Vector Integration - Line integral – work done – Potential function – area- surface and volume integrals Vector integral theorems: Green's theorem-Stoke's and Gauss's Divergence Theorem (Without proof). Verification of Green's - Stoke's and Gauss's Theorems.

Course Outcomes:

1. Understands the geometrical interpretation of Rolle's, Lagrange's, Cauchy Mean value theorems,
2. Understands the Taylors theorem, Understands applications of Taylor theorem in complex analysis, Understands the geometrical interpretation of all the forms of remainders, Understands the maximum and minimum concept with and without constraints.

3. Learns about the solution of transcendental equations, Understands geometrical meaning of the solution of the curves.
4. Student learn about the interpolation process, He can find the interpolating polynomial function for the given data. Student understands how to find the unknown values of y wrt x values
5. Learn about vector and scalar fields, Grad, div and Curl and their applications and properties,
6. Study about Solenoidal and irrotational vectiors with scalar potential function. Vector integration like - Line integral, Surface and Volume integrals and their Evaluations. Study about Integral Theorems Like –Green's , Gauss's and Stokes's theorem's and their verifications

TEXT BOOKS:
1. Mathematical Methods of Science and Engineering by Kanti B.Datta ,Cengage Learning
2. Higher Engineering Mathematics by B.S. Grewal, Khanna Publishers.
3. Numerical Methods using MATLAB by John H Matthews, Kurt D Fink, Pearson Education
4. Numerical Methods, Jain, SRK Iyyengar Narosa Publications

REFERENCE BOOKS:
1. Advanced engineering Mathematics by Kreyszig, John Wiley & Sons Publishers.
2. Advanced Engineering Mathematics by R.K. Jain & S.R.K. Iyengar, 3rd edition, Narosa Publishing House, Delhi.
3. Engineering Mathematics – I by T.K. V. Iyengar, B. Krishna Gandhi & Others, S. Chand.
4. Engineering Mathematics – I by D. S. Chandrasekhar, Prison Books Pvt. Ltd.
5. Engineering Mathematics – I by G. Shanker Rao & Others I.K. International Publications.
6. Advanced Engineering Mathematics with MATLAB, Dean G. Duffy, 3rd Edi, CRC Press Taylor & Francis Group.
7. Mathematics for Engineers and Scientists, Alan Jeffrey, 6ht Edi, 2013, Chapman & Hall/ CRC
8. Advanced Engineering Mathematics, Michael Greenberg, Second Edition. Pearson Education.

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

I Year B.Tech CSE – II Sem

L   T/P/D   C
4   1 / - / -   4

MATHEMATICS – III

Course Objectives:
1. Understands the applications of z-transforms
2. Find the Fourier series representation of the Periodic functions
3. Find the Fourier series representation for the functions in an arbitrary interval
4. Find the applications of numerical differentiation in evaluating engineering problems.
5. For the given data the student can fit the respective curves

UNIT I:

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

Fourier Transforms: Fourier integral theorem - Fourier sine and cosine integrals. Fourier transforms – Fourier sine and cosine transforms – properties – inverse transforms – Finite Fourier transforms.

UNIT II:

Z-Transforms :Z-Transforms Inverse Z-Transform properties, damping rule, shifting rule, Initial and final value theorems, convolution theorem solution of difference equation by Z-Transforms

UNIT III:

Curve Fitting, Numerical Differentiation & Integration: Curve fitting: Fitting a first degree (linear) and second degree (parabola), exponential, power curves for a data by the Method of least squares.

Numerical Differentiation & Integration: Trapezoidal Rule, Simpson's $1/3^{rd}$, 3/8 Rule, Gaussian Integration, Evaluation of principal value integrals, Generalized Quadrature.

UNIT IV:

Numerical solution of IVP's in ODE: Numerical solution of Ordinary Differential equations: Solution by Taylor's series-Picard's Method of successive Approximations-Euler's Method-Runge-Kutta Methods – Predictor-Corrector Methods- Adams- Bashforth Method.

UNIT V:

Partial differential equations & Applications: Formation of partial differential equations by eliminating arbitrary constants or arbitrary functions, Solutions of first order linear (Lagrange) equation, Solution of nonlinear first order equations (four standard types), Solution using separation of variables, Application to heat equation (one dimension), wave equation (one dimension).

Course Outcomes:
1. This best-fitting curve can be obtained by the method of least squares.
2. Applications of Fourier transforms in engineering problems.
3. PDEs   can   be   used   to   describe   a   wide   variety   of   phenomena   such   as sound, heat, electrostatics, electrodynamics, fluid flow, elasticity, or quantum mechanics.

TEXT BOOKS:
1. Mathematical Methods of Science and Engineering by Kanti B.Datta ,Cengage Learning
2. Higher Engineering Mathematics by B.S. Grewal, Khanna Publishers.
3. Numerical Methods using MATLAB by John H Matthews, Kurt D Fink, Pearson Education
4. Numerical Methods, Jain, SRK Iyyengar Narosa Publications

REFERENCE BOOKS:
1. Advanced engineering Mathematics by Kreyszig, John Wiley & Sons Publishers.
2. Advanced Engineering Mathematics by R.K. Jain & S.R.K. Iyengar, 3rd edition, Narosa Publishing House, Delhi.
3. Engineering Mathematics – I by T.K. V. Iyengar, B. Krishna Gandhi & Others, S. Chand.
4. Engineering Mathematics – I by D. S. Chandrasekhar, Prison Books Pvt. Ltd.
5. Engineering Mathematics – I by G. Shanker Rao & Others I.K. International Publications.
6. Advanced Engineering Mathematics with MATLAB, Dean G. Duffy, 3rd Edi, CRC Press Taylor & Francis Group.
7. Mathematics for Engineers and Scientists, Alan Jeffrey, 6ht Edi, 2013, Chapman & Hall/ CRC
8. Advanced Engineering Mathematics, Michael Greenberg, Second Edition. Pearson Education.

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

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

DATA STRUCTURES AND SOFTWARE TOOLS

Course Objectives:

1. Develop skills to use and analyze simple linear and nonlinear data Structures
2. Strengthen the ability to identify and apply the suitable data structure for the given real world problem
3. Derive and express time and space complexities.
4. Understand the maintenance of data using XML and related technologies.
5. Learn Java development tools.
6. Develop skills in debugging a program.

UNIT I:
Stacks: Basic stack operations, Representation of a stack using arrays, Stack Applications: Reversing list, factorial calculation, infix-to-postfix transformation, postfix expression evaluation
Queues: Basic queue operations, Representation of a queue using array, Classification and implementation – Circular and Dequeues, Applications of Queues.

UNIT II:
Linear lists: Introduction, linked lists, single linked list, representation of a linked list in memory, operations on a single linked list, advantages and disadvantages of single linked list. Stacks and Queues representation using Single linked list

UNIT III:
Algorithm specification, Time and Space complexities using Asymptotic notations
Searching: Basic concepts, linear search, binary search, Fibonacci search
Sorting techniques: Basic concepts, Bubble sort, Selection sort, Insertion sort, Merge sort, Quick sort and their implementation programs

UNIT IV:
Introduction to XML and Related Technologies: Issues in information exchange, What is XML? XML basics, Document type definitions (DTDs), Working with DTDs, XML namespaces, Generating XML schemas, XML schemas- XPath, XSL transformation, simple XSL transforms.
Java Development Tools: The JDT environment, Creating and running a program, Automating testing with JUnit, Using Ant and javadoc.

UNIT V:
Debugging Applications: Using the debugger, Starting the debugger, Setting breakpoints, Stepping through the code, Inspecting variables and expressions, Hot code replace.
Introduction to Integrated Development Environment – Eclipse
Introduction, Terms and Concepts, Architecture - Platform Architecture, Plug-in Architecture. Finding, installing and updating plug-ins, Some popular plug-ins, Eclipse Case Studies.
Eclipse Web Tools Platform: Web Tools Platform (WTP 1.0) Project, Web Standard Tools, J2EE Standard Tools, The Data Tools Project, The AJAX Tools Framework.

Course Outcomes:
At the end of the course, students able to:
1. Use and analyze different data structures
2. Identity the appropriate data structure for given problem
3. Analyzes the programs for time and space complexities
4. Create XML documents and related transformations.
5. Create and execute sample Java programs.
6. Debug and inspect variables in a program
7. Capable of creating projects in IDE Environment such as Eclipse.
8. Capable of creating Web based project and AJAX framework.

TEXT BOOKS:
1. Data Structures using C by Reema Thareja – Second Edition, Oxford University Press.
2. Data Structures: A Pseudocode Approach with C by R.F.Gilberg and B.A.Forouzan - Second Edition, Cengage Learning.

3. Beginning XML, Joe Fawcett, Danny Ayers, Liam R. E. QuinJoe Fawcett, Danny Ayers, Liam R. E. Quin, Wrox Press. 2012.
4. Eclipse: Programming Java Applications , Steve Holzner, O'Reilley, 2004.

REFERENCE BOOKS:

1. C& Data structures by P. Padmanabham - Third Edition, B.S. Publications.
2. Data Structures using C by A.M.Tanenbaum, Y.Langsam, and M.J. Augenstein – Seventh Edition, Pearson Education
3. C Programming & Data Structures by E. Balagurusamy - TMH.
5. C& Data structures by E V Prasad and N B Venkateswarlu - S. Chand & Co.

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

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

ENGINEERING CHEMISTRY LAB

Experiments:
*Any 10 of the following:

Titrimetry:
1. Estimation of ferrous iron by dichrometry.
2. Estimation of hardness of water by EDTA method.
Mineral analysis:
3. Estimation of manganese dioxide in pyrolusite.
Instrumental Methods:
Colorimetry:
4. Determination of ferrous iron in cement by colorimetric method
Conductometry:
5. Conductometric titration of strong acid vs strong base.
6. Conductometric titration of mixture of acids vs strong base.
Potentiometry:
7. Titration of strong acd vs strong base by potentiometry.
8. Titration of weak acid vs strong base by potentiometry.
Physical properties:
 9.Determination of viscosity of sample oil by redwood / oswald's viscometer.
10.Determination of Surface tension of lubricants.
Preparations:
 11. Preparation of Aspirin
Kinetics:
12. To determine the Rate constant of hydrolysis of methyl acetate by an acid.

TEXT BOOKS:
1. Practical Engineering Chemistry by K. Mukkanti, etal, B.S. Publications, Hyderabad.
2. Inorganic quantitative analysis, Vogel.

 REFERENCE BOOKS:
1. Text Book of engineering chemistry by R. N. Goyal and Harrmendra Goel, Ane Books Private Ltd.,
2. A text book on experiments and calculation Engg. S.S. Dara.
3. Instrumental methods of chemical analysis, Chatwal, Anand, Himalaya Publications.

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

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

-   - /3 / -   2

DATA STRUCTURES AND SOFTWARE TOOLS LAB

Course Objectives:

1. To develop skills to design and analyze simple linear and nonlinear data Structures
2. To strengthen the ability to identify and apply the suitable data structure for the given real world problem
3. To gain knowledge in practical applications of data structures
4. To gain familiarity with software tools

Week 1:
Write C programs that implement stack (its operations) using i) Arrays ii) Pointers

Week 2:
Write a C program that uses Stack operations to convert infix expression into postfix expression

Week 3:
Write a C program that uses Stack operations to evaluate the postfix expression

Week 4:
Write C programs that implement Linear Queue (its operations) using i) Arrays ii) Pointers

Week5:
Write C program that implement Circular Queue (its operations) using arrays

Week 6:
Write C program that implement Double-ended Queue (its operations) using arrays

Week 7:
Write a C program that uses functions to perform the following operations on single linked list.
    i) Insertion   ii) Deletion   iii) Traversal

Week 8:
Write a C program to implement stack using single linked list.

Week 9:
Write a C program to implement queue using single linked list.

Week 10:
Write C programs that use both recursive and non recursive functions to perform the following searching operations for a Key value in a given list of integers:
    i) Linear search   ii) Binary search iii) Fib Search

Week 11:
Write C programs that implement the following sorting methods to sort a given list of integers in ascending order:
    i) Bubble sort   ii) Selection sort iii) Insertion sort

Week 12:
Write C programs that implement the following sorting methods to sort a given list of integers in ascending order:
        i)   Quick sort ii) Merge sort

Week 13:
Write an XML file to maintain student details such as Roll No, Student Name ,Email id and there mobile Number
Write a Schema(XSD) for Book details
(Hint: Book Name, Author Name, Publications, Price and Attributes accordingly)

Week 14:
   a) Installation of Eclipse with required plug-ins.
   b) Write a sample java program to accept a Number to check whether it is prime Number or not .

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

1. Design and analyze the time and space efficiency of the data structure
2. Identity the appropriate data structure for given problem
3. Have practical knowledge on the application of data structures
4. Have acquainted with different software tools.

TEXT BOOKS:

1. C Programming by D.Ravi Chandran
2. Data structures using Aaron M. Tenenbaum, Yedidyah Langsam, Moshe J.Augestien Pearson Education
3. C & Data structures, P.Padmanabham, BS Publications
4. C and Data Structures, Ashok N.Kamthane, Pearson Edition.
5. Data structures and Algorithms in C++, Michael T.Goodrich, R.Tamassia and .Mount, Wiley student edition, John Wiley and Sons.

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

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

0   - /3 / -   2

ENGLISH LANGUAGE COMMUNICATION SKILLS LAB

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

Course Objectives:
To sensitize the students to the intelligibility in their pronunciation of English, speech sounds, word accent, intonation and rhythm
To improve the fluency in spoken English and neutralize mother tongue influence
To facilitate honing of listening and speaking skills of students
 To train students to understand nuances of both verbal and non verbal communication during all activities
To develop confidence to face the audience and participate in activities
To help the students shed inhibitions and communicate with clarity

Listening Skills:
Objectives
1. To enable students to develop their listening skill so that they may appreciate its role in the LSRW skills approach to language and improve their pronunciation
2. To equip students with necessary training in listening so that they can comprehend the speech of people of different backgrounds and regions
Students should be given practice in listening to the sounds of the language to be able to recognise them, awareness regarding stress and recognise and use the right intonation in sentences.
• Listening for general content
• Listening to fill up information
• Intensive listening
• Listening for specific information

Speaking Skills:
Objectives
1. To make students aware of the role of speaking in English and its contribution to their success.
2. To enable students to express themselves fluently and appropriately in social and professional contexts.
• Oral practice
• Describing objects/situations/people
• Just A Minute(JAM) Sessions.

Syllabus:
English Language Communication Skills Lab shall have two parts:
a. Computer Assisted Language Learning (CALL) Lab
b. Interactive Communication Skills (ICS) Lab

UNIT I:
CALL Lab: Introduction to Phonetics – Speech Sounds – Vowels and Consonants
ICS Lab: Ice-Breaking activity and JAM session
Listening: listening for sounds in context, for ideas.
Speaking: ideation and translation of ideas into sentences.

UNIT II:
CALL Lab: Structure of Syllables - Past Tense Marker and Plural Marker – Weak Forms and Strong Forms - Consonant Clusters.
ICS Lab: Situational Dialogues – Role-Play- Expressions in Various Situations – Self-introduction and Introducing others – Greetings – Apologies – Requests – Social and Professional Etiquette - Telephone Etiquette.
Listening: listening for specific purposes, for details.
Speaking: speaking in the above situations with clarity, connectivity, maintaining voice characters.

UNIT III:
CALL Lab: Word accent and Listening Comprehension-reading(aloud) meaningfully.
ICS Lab: Descriptions- Narrations- Giving Directions and guidelines.
Listening: listening for intelligible English
Speaking: formal and informal conversations, register.

UNIT IV:
CALL Lab: Intonation and Common errors in Pronunciation- reading aloud(evaluating through recording).
ICS Lab: Extempore- Public Speaking , Oral Presentation Skills
Listening: note taking and listening for speaker's tone/attitude
Speaking: organizing , connecting ideas and sentences, short forms in spoken English, errors in spoken English

UNIT V:
CALL Lab: Neutralization of Mother Tongue Influence and Conversation Practice
ICS Lab: Information Transfer, Debate

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

2. Interactive Communication Skills (ICS) Lab :
The Interactive Communication Skills Lab: A Spacious room with movable chairs and audio-visual aids with a
Public Address System, a T. V., a digital stereo –audio & video system and camcorder etc.
**Books Suggested for English Language Lab Library (to be located within the lab in addition to the
CDs of the text book which are loaded on the systems):**
Prescribed Lab Manual: English Language Communication Skills laboratory Manual Published by Pearson,
New Delhi 2012

Course Outcomes:
1. Better Understanding of nuances of language through audio- visual experience and group activities
2. Neutralization of accent for intelligibility
3. Speaking with clarity and confidence thereby enhancing employability skills of the students
4. Good understanding of listening skills and speaking skills and their application in real life situations.
5. Good understanding of non-verbal communication and developing confidence to face audience, shed
inhibitions.

REFERENCE BOOKS:
1. Polyskills by Cambridge Foundation Course
2. Technical Communication by William Sanborn Pfeiffer and TVS Padmaja
3. English Language Communication, a Reader Cum Lab Manual Course Content and Practice by Dr. A
   Ramakrishna Rao, Dr. G. Natanam, Prof. S.A. Sankaranarayanan
4. A Course On English by K.R. Lakshminarayanan
5. Successful Presentations by John Hughes and Andrew Mallett
6. Oxford Word Skills, learn and Practise English Vocabulary by Ruth Gairns and Redman
7. Public Speaking Techniques, Speak Like a Winner by Akash Karia
8. The Art of Public Speaking by Stephen Lucas
9. Essential Communication Skills by Shalini Aggarwal, Linda Chapman
10. English Language Communication Skills, Lab Manual cum Workbook by Cengage Learning.

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

II Year B.Tech CSE – I Sem   L   T/P/D   C
                                                                                 3   1 / - / -   4

PROBABILITY & STATISTICS

Course Objectives:

1. Understand a random variable that describes randomness or an uncertainty in certain realistic situation.
2. It can be of either discrete or continuous type.
3. In the discrete case, study of the binomial and the Poisson random variables and the Normal random variable for the continuous case predominantly describe important probability distributions. Important statistical properties for these random variables provide very good insight and are essential for industrial applications.
4. Most of the random situations are described as functions of many single random variables. In this unit, the objective is to learn functions of many random variables through joint distributions.
5. The types of sampling, Sampling distribution of means ,Sampling distribution of variance, Estimations of statistical parameters, Testing of hypothesis of few unknown statistical parameters.
6. The mechanism of queuing system ,The characteristics of queue,The mean arrival and service rates
7. The expected queue length, The waiting line
8. The random processes, The classification of random processes, Markov chain, Classification of states
9. Stochastic matrix (transition probability matrix),Limiting probabilities, Applications of Markov chains

UNIT I:
Single Random variables and probability distributions: Random variables – Discrete and continuous.
Probability distributions, mass function/ density function of a probability distribution . Mathematical Expectation, Moment about origin, Central moments , Moment generating function of probability distribution. Binomial, Poisson & normal distributions and their properties. Moment generating functions of the above three distributions, and hence finding the mean and variance.

UNIT II:
Multiple Random variables, Correlation & Regression: Joint probability distributions- Joint probability mass density function, Marginal probability mass / density functions, Covariance of two random variables, Correlation - Coefficient of correlation, The rank correlation. Regression- Regression Coefficient, The lines of regression and multiple correlation & regression.

UNIT III:
Sampling Distributions and Testing of Hypothesis: Sampling, Definitions of population-sampling-statistic-parameter. Types of sampling, Expected values of Sample mean and variance, sampling distribution, Standard error, Sampling distribution of means and sampling distribution of variance.
Parameter estimations – likelihood estimate, interval estimations.
Testing of hypothesis: Null hypothesis, Alternate hypothesis, type I, & type II errors – critical region, confidence interval, Level of significance. One sided test, two sided test,
Large sample tests:
(i) Test of Equality of means of two samples equality of sample mean and population mean (cases of known variance & unknown variance, equal and unequal variances)
(ii) Tests of significance of difference between sample S.D and population S.D.
(iii) Tests of significance difference between sample proportion and population proportion & difference between two sample proportions.
Small sample tests:
Student t-distribution, its properties; Test of significance difference between sample, mean and population mean; difference between means of two small samples, Snedecor's F- distribution and it's properties. Test of equality of two population variances, Chi-square distribution , it's properties, Chi-square test of goodness of fit

UNIT IV:
Queuing Theory: Structure of a queuing system, Operating Characteristics of queuing system, Transient and steady states, Terminology of Queuing systems, Arrival and service processes- Pure Birth-Death process Deterministic queuing models- M/M/1 Model of infinite queue, M/M/1 model of finite queue.

UNIT V:
Stochastic processes: Introduction to Stochastic Processes –Classification of Random processes, Methods of description of random processes, Stationary and non-stationary random process, Average values of single random process and two or more random processes. Markov process, Markov chain, classification of states – Examples of Markov Chains, Stochastic Matrix.

Course Outcomes:

1. Students would be able to identify distribution in certain realistic situation. It is mainly useful for circuit as well as non-circuit branches of engineering. Also able to differentiate among many random variable Involved in the probability models. It is quite useful for all branches of engineering.
2. The student would be able to calculate mean and proportions (small and large sample) and to make important decisions from few samples which are taken out of unmanageably huge populations. It is mainly useful for non-circuit branches of engineering.
3. The students would be able to find the expected queue length, the ideal time, the traffic intensity And the waiting time. These are very useful tools in many engineering and data management problems in the industry. It is useful for all branches of engineering.
4. The student would able to understand about the random process, Markov process and Markov chains which are essentially models of many time dependent processes such as signals in communications, time series analysis, queuing systems. The student would be able to find the limiting probabilities and the probabilities in nth state. It is quite useful for all branches of engineering

TEXT BOOKS:
1. Probability & Statistics for Engineers & Scientists –Walpole Myers Myers Ye
2. Higher Engineering Mathematics by Dr. B.S. Grewal, Khanna Publishers
3. Probability and Statistics for Engineers and Scientists by Sheldon M.Ross, Academic Press
4. Operations Research by S.D. Sarma,

REFERENCE BOOKS:
1. Mathematics for Engineers by K.B.Datta and M.A S.Srinivas,Cengage Publications
2. Probability and Statistics by T.K.V.Iyengar & B.Krishna Gandhi Et
3. Fundamentals of Mathematical Statistics by S C Gupta and V.K.Kapoor
4. Probability and Statistics for Engineers and Scientists by Jay l.Devore.

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

II Year B.Tech CSE – I Sem   L   T/P/D   C
                                                                                3   1 / - / -   4

MATHEMATICAL FOUNDATIONS OF COMPUTER SCIENCE

Course Objectives:
1. To explain with examples the basic terminology of functions, relations, and sets.
2. To perform the operations associated with sets, functions, and relations.
3. To relate practical examples to the appropriate set, function, or relation model, and interpret the associated operations and terminology in context.
4. To describe the importance and limitations of predicate logic.
5. To relate the ideas of mathematical induction to recursion and recursively defined structures.
6. To use Graph Theory for solving problems.

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

UNIT II:
Relations: Properties of Binary Relations, equivalence, transitive closure, compatibility and partial ordering relations, Lattices, Hasse diagram.
Functions: Inverse Function, Composition of functions, recursive Functions - Lattice and its Properties.
Algebraic structures: Algebraic systems Examples and general properties, Semi-groups and monoids, groups, sub-groups' homomorphism, Isomorphism. Lattice as POSET, Boolean algebra.

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

UNIT IV:
Recurrence Relations: Generating Functions, Function of Sequences Calculating Coefficient of generating function, Recurrence relations, Solving recurrence relation by substitution and Generating functions. Method of Characteristics roots, solution of Non-homogeneous Recurrence Relations.

UNIT V:
Graph Theory: Basic concepts - Representation of Graph, Isomorphism and Sub graphs, Multi graphs and Euler circuits, Hamiltonian graphs, Chromatic Numbers. DFS, BFS, Spanning Trees, planar Graphs.

Course Outcomes:
1. Ability to illustrate by examples the basic terminology of functions, relations, and sets and demonstrate knowledge of their associated operations.
2. Ability to demonstrate in practical applications the use of basic counting principles of permutations, combinations, inclusion/exclusion principle and the pigeonhole methodology.
3. Ability to represent and Apply Graph theory in solving computer science problems.

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, PHI.
3. Discrete Mathematics with applications to Computer Science J P Tremblay & R Manohar
4. Fundamentals of Logic – Arindama Singh, IIT, Madras,Munshiram Manoharlal Publishers

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

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

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

ADVANCED DATA STRUCTURES

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

UNIT I:
Basic concepts- Algorithm Specification-Introduction, Recursive algorithms, Data Abstraction Performance analysis- time complexity and space complexity, Asymptotic Notation-Big O, Omega and Theta notations, Introduction to Linear and Non Linear data structures
Linked lists: Singly Linked Lists-Operations-Insertion, Deletion, Concatenating singly linked lists, Circularly linked lists- Operations for Circularly linked lists, Doubly Linked Lists- Operations- Insertion, Deletion. Representation of single, two dimensional arrays, sparse matrices-array and linked representations.

UNIT II:
Stacks: Stack ADT, definition, operations, array and linked implementations in C, Applications-infix to postfix conversion, Postfix expression evaluation, recursion implementation.
Queue ADT, definition and operations ,array and linked Implementations in C, Circular queues-Insertion and deletion operations, Deque (Double ended queue)ADT,array and linked implementations in C.

UNIT III:
Trees – Terminology, Representation of Trees, Binary tree ADT, Properties of Binary Trees, Binary Tree Representations-array and linked representations, Binary Tree traversals, Threaded binary trees, Max Priority Queue ADT-implementation-Max Heap-Definition, Insertion into a Max Heap, Deletion from a Max Heap.
Graphs – Introduction, Definition, Terminology, Graph ADT, Graph Representations- Adjacency matrix, Adjacency lists, Graph traversals- DFS and BFS.

UNIT IV:
Searching- Linear Search, Binary Search, Static Hashing-Introduction, hash tables, hash functions, Overflow Handling.
Sorting-Insertion Sort, Selection Sort, Radix Sort, Quick sort, Heap Sort, Comparison of Sorting methods.

UNIT V:
Search Trees-Binary Search Trees, Definition, Operations- Searching, Insertion and Deletion, AVL Trees-Definition and Examples, Insertion into an AVL Tree ,B-Trees, Definition, B-Tree of order m, operations-Insertion and Searching, Introduction to Red-Black and Splay Trees (Elementary treatment-only Definitions and Examples), Comparison of Search Trees.
Pattern matching algorithm- The Knuth-Morris-Pratt algorithm, Tries (examples only).

Course Outcomes:
1. Learn how to use data structure concepts for realistic problems.
2. Ability to identify appropriate data structure for solving computing problems in respective language.
3. Ability to solve problems independently and think critically.

TEXT BOOKS:
1. Fundamentals of Data structures in C, 2nd Edition, E.Horowitz, S.Sahni and Susan Anderson-Freed, Universities Press.
2. Data structures A Programming Approach with C, D.S.Kushwaha and A.K.Misra, PHI.

REFERENCE BOOKS:
1. Data structures: A Pseudocode Approach with C, 2nd edition, R.F.Gilberg And B.A.Forouzan, Cengage Learning.
2. Data structures and Algorithm Analysis in C, 2nd edition, M.A.Weiss, Pearson.
3. Data Structures using C, A.M.Tanenbaum,Y. Langsam, M.J.Augenstein, Pearson.

4. Data structures and Program Design in C, 2nd edition, R.Kruse, C.L.Tondo and B.Leung,Pearson.
5. Data Structures and Algorithms made easy in JAVA, 2nd Edition, Narsimha Karumanchi, CareerMonk Publications.
6. Data Structures using C, R.Thareja, Oxford University Press.
7. Data Structures, S.Lipscutz,Schaum's Outlines, TMH.
8. Data structures using C, A.K.Sharma, 2nd edition, Pearson..
9. Data Structures using C &C++, R.Shukla, Wiley India.
10. Classic Data Structures, D.Samanta, 2nd edition, PHI.
11. Advanced Data structures, Peter Brass, Cambridge.

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

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

DIGITAL LOGIC DESIGN

Course Objectives:

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

UNIT I:

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

UNIT II:

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

UNIT III:

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

UNIT IV:

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

UNIT V:

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

Course Outcomes:

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

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

TEXT BOOKS :

1. DIGITAL DESIGN , Third Edition , M.Morris Mano, Pearson Education/PHI.

2. FUNDAMENTALS OF LOGIC DESIGN, Roth, 5th Edition,Thomson.
3. Switching Theory and Logic Design, Anand Kumar, PHI

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 Wiley

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

II Year B.Tech CSE – I Sem

L T/P/D C
4 - / - / - 4

BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

Course Objective:
The will expose basic knowledge on electrical engineering, Network theorems, DC and AC Machines, Basics of electronic devices and circuits

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, Faradays laws of electromagnetic induction. Types of induced EMF's, Kirchhoff's laws, Simple problems.
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, Reciprocity, Thevenin's, Norton's & Maximum power transfer theorems and simple problems.

UNIT II:
Magnetic Circuits: Basic definitions, analogy between electric and magnetic circuits.
Transformers: Principles of operation, Constructional Details, EMF equation, OC and SC test on transformer simple problems.

UNIT III:
D.C Machines: Principle of operation of D.C machines, armature windings, E.M.F equation in a D.C machine, Torque production in a D.C machine, Operation of a D.C machine as a generator, operation of a D.C machine as a motor.
A.C Machines: principle of operation, slip and rotor frequency, torque (simple Problems).

UNIT IV:
Diode And It's Characteristics : P-N junction diode, symbol, V-I Characteristics, Diode Applications,
Zener diode characteristics ,Rectifiers – Half wave, Full wave and Bridge rectifiers with filters and without filters(simple Problems)
Transistors : PNP and NPN Junction transistor, Transistor as an amplifier, SCR characteristics and applications

UNIT V:
Cathode Ray Oscilloscope : Principles of CRT (Cathode Ray Tube), Deflection, Sensitivity, electrostatic and Magnetic deflection, Applications of CRO - Voltage, Current and frequency measurements.
Oscillators: Condition for oscillations. RC-phase shift oscillators with Transistor , Hartley and Colpitts oscillators, Wein bridge oscillator,

TEXT BOOKS:
1. Essentials of Electrical and Computer Engineering by David V. Kerns, JR. J. David Irwin/Pearson.
2. Principles of Electrical and Electronics Engineering by V.K.Mehta, S.Chand & Co.

REFERENCES:
1. Introduction to Electrical Engineering – M.S Naidu and S. Kamakshaiah, TMH Publ.
2.Basic Electrical Engineering by Kothari and Nagarath, TMH Publications, 2nd Edition

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

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

MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS

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

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

UNIT III:
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.
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 IV :
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)
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 V:
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).

Course Outcomes:
Upon completion of this course, student should be able to:
1. To apply the principles of managerial economics to apply demand and supply analysis.

2. To understand the basic concepts elasticity of demand, production and cost analysis.
3. To understand the basic concepts market pricing and policies, business and new economic policies, capital accounting, financial analysis and financial budgeting.

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.

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

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

ELECTRICAL AND ELECTRONICS ENGINEERING LAB

Any 5 experiments to be done from Section A

Section A: Electrical Engineering:

 1. Verification of Superposition and Reciprocity theorems.
2. Verification of maximum power transfer theorem. Verification on AC and DC with Resistive and Reactive loads.
3. Verification of Thevenin's and Norton's theorem.
4. Verification of KCL and KVL
5. Magnetization characteristics of D.C. Shunt 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).

Any 5 experiments to be done from Section B
Section B: Electronics Engineering
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)
6.RC Phase Shift Oscillator

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

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

0   - / 3 / -   2

ADVANCED DATA STRUCTURES LAB

Course Objectives:

1. To write and execute programs in C to solve problems using data structures such as arrays, linked lists, stacks, queues, trees, graphs, hash tables and search trees.
2. To write and execute write programs in C to implement various sorting and searching methods.

Recommended Systems/Software Requirements:

1. Intel based desktop PC with minimum of 166 MHZ or faster processor with at least 64 MB RAM and 100 MB free disk space.
2. C compiler.

Week1:

Write a C program that uses functions to perform the following:

a) Create a singly linked list of integers.

b) Delete a given integer from the above linked list.

c) Display the contents of the above list after deletion.

Week2:

Write a C program that uses functions to perform the following:

a) Create a doubly linked list of integers.

b) Delete a given integer from the above doubly linked list.

c) Display the contents of the above list after deletion.

Week3:

Write a C program that uses stack operations to convert a given infix expression into its postfix Equivalent, Implement the stack using an array.

Week 4:

Write C programs to implement a double ended queue ADT using i)array and ii)doubly linked list respectively.

Week 5:

Write a C program that uses functions to perform the following:

a) Create a binary search tree of characters.

b) Traverse the above Binary search tree recursively in Postorder.

Week 6:

Write a C program that uses functions to perform the following:

a) Create a binary search tree of integers.

b) Traverse the above Binary search tree non recursively in inorder.

Week 7:

Write C programs for implementing the following sorting methods to arrange a list of integers in Ascending order:

a) Insertion sort b) Merge sort

Week 8:

Write C programs for implementing the following sorting methods to arrange a list of integers in Ascending order:

a) Quick sort b) Selection sort

Week 9:

i) Write a C program to perform the following operation:

a)Insertion into a B-tree.

ii) Write a C program for implementing Heap sort algorithm for sorting a given list of integers in ascending order.

Week 10:

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

Week 11:

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

Week 12:
Write C programs for implementing the following graph traversal algorithms:
a)Depth first traversal b)Breadth first traversal

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

TEXT BOOKS:
1 C and Data Structures, Third Edition, P.Padmanabham, BS Publications.
2 C and Data Structures, Prof. P.S.Deshpande and Prof. O.G. Kakde, Dreamtech Press.
3 Data structures using C, A.K.Sharma, 2nd edition, Pearson.
4 Data Structures using C, R.Thareja, Oxford University Press.
5 C and Data Structures, N.B.Venkateswarlu and E.V.Prasad,S.Chand.
6 C Programming and Data Structures, P.Radha Krishna, Hi-Tech Publishers

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

II Year B.Tech CSE – II Sem   L   T/P/D   C
                                                                      3   1 / - / -   4

ENVIRONMENTAL STUDIES

Course Objectives

- An interdisciplinary approach to complex environmental problems using basic tools of the natural and social sciences including geo systems, biology, chemistry, economics, political science and international processes.

- The ability to work effectively as a member of an interdisciplinary team on complex problems involving multiple competing stakeholders and agendas.

- The ability to apply quantitative reasoning skills to environmental problems including basic calculations related to energy, water, and air issues and the use of statistical methods in data analysis and argumentation.

UNIT I:
Ecosystems: Definition, Scope and Importance of ecosystem, Concept of ecosystem, Classification of ecosystems, Structure and Structural Components of an ecosystem, Functions of ecosystem, Food chains, food webs and ecological pyramids. Flow of energy, Biogeochemical cycles, Homeostasis / Cybernetics, Food chain concentration, Biomagnification, ecosystems 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 and droughts, 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 / land cover mapping.
Biodiversity And Biotic Resources: Introduction, Definition, genetic, species and ecosystem diversity. Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and intrinsic values. Hot spots 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 III:
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 methods: effluent treatment plants (ETP), Sewage 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 IV:
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 Montréal Protocol,

Environmental Impact Assessment (Eia) And Environmental Management Plan: Definition of Impact: classification of impacts, Positive and Negative, methods of baseline data acquisition. Impacts on different environmental components. Prediction of impacts and impact assessment 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 V:

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, Municipal solid waste management and handling rules, biomedical waste management and handling rules, hazardous waste management and handling rules .

TOWARDS SUSTAINABLE FUTURE

Concept 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 and Sustainable Communities, Human health, Role of IT in Environment, Environmental Ethics, Environmental Economics, Concept of Green Building, Clean Development Mechanism (CDM).

Course Outcomes

- To enable the students to realise the importance of the sustainable use of natural resources
- To make the students aware of the impacts of human actions on environment and measures to minimize and mitigate them
- To enable the students to become aware of the current issues and problems pertaining to the environment

TEXT BOOKS:
1. Environmental studies , From crisis to cure by R.Rajagopalan, 2005
2. Environmental studies by Erach Bharucha 2005, University Grants Commission, University Press.

REFERENCE BOOKS:
1. Text book of Environmental Science and Technology by M.Anji Reddy 2007
2. Environmental Science: towards a sustainable future by Richard T.Wright. 2008 PHL Learning Private Ltd. New Delhi
3. Environmental Engineering and science by Gilbert M.Masters and Wendell P. Ela .2008 PHI Learning Pvt. Ltd.

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

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

DATABASE MANAGEMENT SYSTEMS

Course objectives:

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

UNIT I:

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

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

UNIT II:

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

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

UNIT – III:

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

UNIT – IV:

Transaction concept- Transaction state- Implementation of atomicity and Durability-Concurrent executions – Serializability, Recoverability Lock Based Protocols, Timestamp Based Protocols, Validation Based Protocols, Multiple Granularity, Dead Lock Handling – Failure Classification – Storage Structure

Recovery and Atomicity- Log Based recovery – Recovery with concurrent transactions– Checkpoints .

UNIT V:

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

Course outcomes:

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

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

TEXTBOOKS:

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

REFERENCE BOOKS:

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

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

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

OBJECT ORIENTED PROGRAMMING

Course Objectives:

On completion, students will be able to produce object-oriented solutions to a range of standard programming problems; they will be able to articulate and restructure programming objectives in the object-oriented paradigm. They will be informed with regard to the fundamental concepts and principles of object-oriented programming and able to apply these in any programming language.

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

UNIT II:
Classes: Classes and Objects - Constructors – methods - this keyword – garbage collection-finalize - Overloading methods and constructors - Access Control- Static members – nested and inner classes – command line arguments - variable length arguments.
Inheritance: Forms of inheritance – specialization, specification, construction, extension, limitation, combination, benefits and costs of inheritance. Super and - final keyword-polymorphism, method overriding - dynamic method dispatch –abstract classes – exploring String class

UNIT III:
Packages and Interfaces: Defining and accessing a package – understanding CLASSPATH – access protection importing packages – Interfaces - Defining and implementing an interface, Applying interfaces, Variables in interfaces and extended interfaces. Exploring java.lang and java.util packages.
Exception Handling-Fundamentals, usage of try, catch, multiple catch clauses, throw, throws and finally. Java Built in Exceptions and creating own exception subclasses

UNIT IV:
 Multithreaded Programming: Java Thread life cycle model – Thread creation - Thread Exceptions - Thread Priority – Synchronization - Messaging - Runnable Interface - Interthread Communication - Deadlock - Suspending, Resuming and stopping threads.
I/O Streams: File – Streams – Advantages - The stream classes – Byte streams – Character streams.
Networks basics: Socket Programming - Proxy Servers - TCP/IP Sockets - Net Address - URL - Datagram's

UNIT V:
Applet Programming: How Applets differ from Applications - Applet Life Cycle - Creating an Applet - Running the Applet- Designing a Webpage - Applet Tag - Adding Applet to HTML file - More about Applet Tag - Passing parameters to Applets - Aligning the display.
Event handling: basics of event handling, Event classes, Event Listeners, delegation event model, handling mouse and keyboard events, adapter classes, AWT Class hierarchy - AWT Controls - Layout Managers and Menus, limitations of AWT, Swing, MVC architecture, components, containers, exploring swing.

Course Outcomes:
Upon completion of this course, students should be able to Design/Develop Program
1. Implement Program
   o Write code
   o Perform unit testing o Integrate subsystems
   o Resolve defects and revise and adapt existing code
2. Test and Validate Program
   o Develop test
   o Procedures
   o Perform tests

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

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

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

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

COMPUTER ORGANIZATION

Course Objectives:
1. This course is used to master the basic hardware and software issues of computer organization.
2. The students are expected to know the inner workings of a computer
3. Ability to analyze the hardware and software issues related to computers and the interface between the two.
4. The students are able to work out the tradeoffs involved in designing a modern computer.

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

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

UNIT III:
Micro programmed Control: Control memory, address sequencing, micro program example, design of control unit, hardwired control and micro programmed control.
The Memory Organization: Memory hierarchy, Main Memory, Cache memory, performance considerations, virtual memory, secondary storage.

UNIT IV:
Computer Arithmetic: Addition and subtraction, multiplication algorithms, Division algorithms, floating-point arithmetic operations, Decimal arithmetic unit, Decimal arithmetic operations.
Input-Output Organization: Peripheral devices, input-output interface, asynchronous data transfer, modes of transfer, priority interrupt, direct memory access.

UNIT V:
Pipeline and vector processing: Parallel Processing, Pipelining, Arithmetic Pipeline, Instuction pipeline, RISC pipeline Vector Processing, Array Processors.

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

1. Student will learn the concepts of computer organization for several engineering applications.
2. Student will develop the ability and confidence to use the fundamentals of computer organization as a tool in the engineering of digital systems.
3. An ability to identify, formulate, and solve hardware and software computer engineering problems using sound computer engineering principles

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

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

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

II Year B.Tech CSE – II Sem   L   T/P/D   C
                                                                 3   1 / - / -   4

FORMAL LANGUAGES AND AUTOMATA THEORY

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

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

UNIT II:
Regular Languages : Regular Sets , Regular Expressions , identity Rules, Constructing Finite automata for a given regular expressions, Conversion of Finite automata to 86 regular expressions, Pumping lemma of regular sets , closure properties of regular sets (proofs not required). Regular Grammars – right linear and left linear grammars, equivalence between regular grammar and FA,

UNIT III:
Context Free Grammar- derivation trees, sentential forms, right most and left most derivations of strings. Ambiguity in Context frees Grammars. Minimization of Context free grammars, CNF, GNF, Pumping Lemma for Context Free Languages. Enumeration of properties of CFL (proofs omitted).
Push Down Automata- definition, model, acceptance of CFL, Acceptance by final state and acceptance by empty state and its equivalence, Equivalence of CFL and PDA (proofs not required), Introduction to DCFL and DPDA.

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

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

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

TEXT BOOKS:

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

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

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

II Year B.Tech CSE – II Sem   L   T/P/D   C
                                                                     3   1 / - / -   4

DESIGN AND ANALYSIS OF ALGORITHMS

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

UNIT I: (T1 – 1.1 to 1.4, 2.5, 6.2 to 6.4)
Introduction: Algorithm, Algorithm Specification, Performance Analysis-Space complexity, Time complexity, Asymptotic Notation, Randomized Algorithms.
Disjoint Sets- Introduction, Union and Find algorithms, Techniques for Graphs, Connected Components and Spanning trees, Bi-connected components and DFS.

UNIT II: (T1 – 3.1 to 3.5, 3.7, 4.1, 4.2, 4.4 to 4.6, 4.8)
Divide and conquer: General method , Applications-Binary search, Finding the Maximum and Minimum, Merge sort, Quick sort, Strassen's Matrix Multiplication**.**
Greedy method: General method, Applications - Knapsack Problem, Job Sequencing with Deadlines, Minimum-cost Spanning Trees, Optimal Storage on Tapes, Single-source Shortest Paths.

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

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

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

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

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

REFERENCE BOOKS:
1. Algorithm Design: Foundations, Analysis and Internet examples M.T.Goodrich and R.Tomassia,John wiley and sons.
2. Introduction to Design and Analysis of Algorithms A strategic approach R.C.T.Lee, S.S.Tseng, R.C.Chang and T.Tsai, Mc Graw Hill.
3. Data structures and Algorithm Analysis in C++, Allen Weiss, Second edition, Pearson education.
4. Design and Analysis of algorithms, Aho, Ullman and Hopcroft, Pearson education.
5. Algorithms Richard Johnson baugh and Marcus Schaefer, Pearson Education

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

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

DATABASE MANAGEMENT SYSTEMS LAB

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

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 area
     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.

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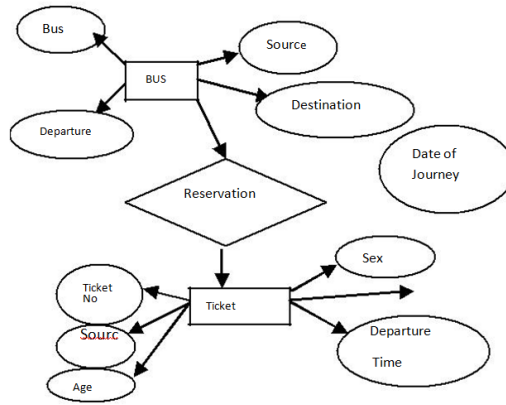
Note: The student is required to submit a document by drawing the E-R Diagram to the lab teacher.

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.

Passportid	Ticketid

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.
Displaythe 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.Ticket 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
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

Course outcomes:

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

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

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

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

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

OBJECT ORIENTED PROGRAMMING LAB

Course Objectives:

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

Week 1:

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:

c) 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 String Tokenizer 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:

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:

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:

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:

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

Week 11:

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 42eparated by commas. Write a java program to display the table using Jtable component.

Course Outcomes:
Upon completion of the course, the students are expected to:
1. Be able to understand better the object-oriented approach in programming. Students should be able to analyze and design a computer program to solve real world problems based on object-oriented principles.
2. Be able to write computer programs to solve real world problems in Java
3. To learn and appreciate the importance and merits of proper comments in source code and API documentations
4. Be able to write simple GUI interfaces for a computer program to interact with users, and to understand the event-based GUI handling principles.

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.

MALLA REDDY ENGINEERING COLLEGE
(AUTONOMOUS)

III Year B.Tech. CSE-I Sem

	L	T/P/D	C
	4	1/ - /-	4

MICROPROCESSORS AND MICROCONTROLLERS

Course Objective:
- To develop an in-depth understanding of the operation of microprocessors and microcontrollers, machine language programming & interfacing techniques.
- To design and develop Microprocessor/ microcontroller based systems for real time applications using low level language like ALP.
- To understand the basics of microprocessors and microcontrollers architectures and its functionalities

UNIT -I:

8086 Architecture: 8086 Architecture-Functional diagram, Register Organization, Memory Segmentation, Programming Model, Memory addresses, Physical Memory Organization, Architecture of 8086, Signal descriptions of 8086- Common Function Signals, Timing diagrams, Interrupts of 8086.

UNIT -II:
Instruction Set and Assembly Language Programming of 8086: Instruction formats, Addressing modes, Instruction Set, Assembler Directives, Macros, Simple Programs involving Logical, Branch and Call Instructions, Sorting, Evaluating Arithmetic Expressions, String Manipulations.

UNIT -III:

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

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

Interfacing with advanced devices: Memory Interfacing to 8086, Interrupt Structure of 8086, Vector Interrupt Table, Interrupt Service Routine.

UNIT -IV:

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

UNIT -V:

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

Course Outcome:
- The student will learn the internal organization of popular 8086/8051 microprocessors/microcontrollers.
- The student will learn hardware and software interaction and integration.
- The students will learn the design of microprocessors/microcontrollers-based systems

TEXT BOOKS:

1. D. V. Hall, Microprocessors and Interfacing, TMGH, 2nd Edition 2006.
2. Kenneth. J. Ayala, The 8051 Microcontroller , 3rd Ed., Cengage Learning.

REFERENCE BOOKS:
1. Advanced Microprocessors and Peripherals – A. K. Ray and K.M. Bhurchandani, TMH, 2nd Edition 2006.
2. The 8051Microcontrollers, Architecture and Programming and Applications -K.Uma Rao, Andhe Pallavi, Pearson, 2009.
3. Micro Computer System 8086/8088 Family Architecture, Programming and Design - Liu and GA Gibson, PHI, 2nd Ed.
4. Microcontrollers and Application - Ajay. V. Deshmukh, TMGH, 2005.
5. The 8085 Microprocessor: Architecture, programming and Interfacing – K.Uday Kumar, B.S.Umashankar, 2008, Pearson

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

III Year B.Tech CSE – I Sem   L   T/P/D C
                                                                                      3   1 / - / - 4

WEB TECHNOLOGIES

Course Objectives:

1. Giving the students the insights of the Internet programming and how to design and implement complete applications over the web.
2. It covers the notions of Web servers and Web Application Servers, Design Methodologies with concentration on Object-Oriented concepts, Client-Side
3. Programming, Server-Side Programming, Active Server Pages, Database Connectivity to web applications, Adding Dynamic content to web applications,
4. Programming Common Gateway Interfaces, Programming the User Interface for the web applications.
5. It also concentrates on the usage of recent platforms used in developing web applications such as the .Net environment like C#, XML, and ASP.Net.

UNIT I:
HTML Common tags: List, Tables, images, forms, Frames; Cascading Style sheets. Introduction to Java Scripts, Objects in Java Script, Dynamic HTML with Java Script.

UNIT II:
Introduction to XML: Document type definition, XML Schemas, Document Object model, Presenting XML, Using XML **Processors:** DOM and SAX.
Java Beans: Introduction to Java Beans, Advantages of Java Beans, BDK Introspection, Using Bound properties, Bean Info Interface, Constrained properties Persistence, Customizes, Java Beans API, Introduction to EJB's.

UNIT III:
Web Servers and Servlets: Tomcat web server, Installing the Java Software Development Kit, Tomcat Server & Testing Tomcat, Introduction to Servelets: Lifecycle of a Serverlet, JSDK, The Servelet API, The javax. servelet Package, Reading Servelet 150 parameters, Reading Initialization parameters. The javax.servelet HTTP package, Handling Http Request & Responses, Using Cookies-Session Tracking, Security Issues.

UNIT IV:
Database Access: Database Programming using JDBC, JDBC drivers,Studying Javax.sql.* package, Accessing a Database from a Servelet.
Introduction to JSP: The Problem with Servelet. The Anatomy of a JSP Page, JSP Processing. JSP Application Design with MVC Setting Up and JSP Environment.

UNIT V:
JSP Application Development: Generating Dynamic Content, Using Scripting Elements Implicit JSP Objects, Conditional Processing : Displaying Values Using an Expression to Set an Attribute, Declaring Variables and Methods Error Handling and Debugging Sharing Data Between JSP pages, Requests, and Users Passing Control and Date between Pages – Sharing Session and Application Data – Memory Usage Considerations, Accessing a Database from a JSP page, Deploying JAVA Beans in a JSP Page, Introduction to struts framework.

Course Outcomes:

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

1.   Analyze a web page and identify its elements and attributes.
2.   Create web pages using XHTML and Cascading Styles sheets.
3.   Build dynamic web pages using JavaScript (client side programming). .
4.   Create XML documents.
5.   Create XML Schema.
6.   Build and consume web services

TEXT BOOKS:

1. Web Programming, building internet applications, Chris Bates 2nd edition, WILEY Dreamtech (UNIT s 1, 2)
2. Core SERVLETS ANDJAVASERVER PAGES VOLUME 1: CORE TECHNOLOGIES By Marty Hall and Larry Brown Pearson (UNITs 3,4,5)

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.

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

III Year B.Tech CSE – I Sem   L   T/P/D   C
                                                                   3   1 / - / -   4

COMPUTER NETWORKS

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

UNIT I:

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

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

UNIT II:

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

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

UNIT III:

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

UNIT IV:

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

UNIT V:

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

Course Outcomes:

Upon completion of this course, students should be able to:
1. Understand the Layered Architecture of Computer Networks.
2. Understand the operation of the main components of computer networks.
3. Learn various network protocols and algorithms.
4. Acquire the required skill to design simple computer networks.
5. Become familiar with security risks threatening computer networks.

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

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

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

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

COMPILER DESIGN

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

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:
Parsing: Context free grammars, **Top down parsing** – Backtracking, LL (1), recursive descent parsing, Predictive parsing, Preprocessing steps required for predictive parsing.
Bottom up parsing: Shift Reduce parsing, LR and LALR parsing, Error recovery in parsing , handling ambiguous grammar, YACC – automatic parser generator.

UNIT III:
Semantic analysis: Intermediate forms of source Programs – abstract syntax tree, polish notation and three address codes. Attributed grammars, Syntax directed translation, Conversion of popular Programming languages language Constructs into Intermediate code forms, Type checker.
Symbol Tables: Symbol table format, organization for block structures languages, hashing, tree structures representation of scope information. Block structures and non
block structure storage allocation: static, Runtime stack and heap storage allocation, storage allocation for arrays, strings and records.

UNIT IV:

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

UNIT V:

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

Course Outcomes:
Upon successful completion of this course, students will be able to:
1. Know the major phases of compilation, particularly lexical analysis, parsing, semantic analysis and code generation.
2. Understand the differences types of parsing techniques and syntax directed translations.
3. Understand the code optimization methods..
4. Apply the optimization techniques to programming languages.
5. Know the language features and natural language representations.

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

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.

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

III Year B.Tech CSE – I Sem   L   T/P/D   C
                                                                                                 3   1 / - / -   4

SOFTWARE ENGINEERING

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

UNIT I:
Introduction to Software Engineering: Changing nature of Software, Software Myths. A Generic View Of Process:-Software engineering-A layered technology, The Capability Maturity Model Integration(CMMI)
Process Models:-The water fall model, Incremental process models, evolutionary process models, the unified process.

UNIT II:
Software Requirements: Functional and non functional requirements, User requirements, System requirements, Interface specification, The software requirements document.
Requirements Engineering Process: Feasibility studies, requirements elicitation and analysis, requirements validation, requirements management

UNIT III:
System models: context models, behavior models, data models, object models, structured methods
Design engineering: design process and design quality, design concepts the design model
Creating an architectural design: software architecture, data design, architectural styles and patterns, architectural design

UNIT IV:
Test Strategies: A strategic approach to software testing, Black box and White box Testing, Validation Testing, System Testing. Product Metrics, Software Quality, Metrics for analysis model, Metrics for design model, Metrics for source code, Metrics for testing, Metrics for maintenance Metrics for process and products. Software measurement, Metrics for software quality

UNIT V:
Risk Management: Reactive vs proactive risk strategies, Software risks, Risk identification, Risk projection Risk refinement, RMMM, RMMM plan Quality Management, Quality concepts, Software quality assurance, Software reviews, Formal technical reviews, Statistical Software Quality Assurance, Software reliability, ISO 9000 Quality standards

TEXT BOOKS:

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

REFERENCE BOOKS:

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

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

III Year B.Tech CSE – I Sem   L   T/P/D   C
                                                                                              3   1 / - / - 4

OPERATING SYSTEMS

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

UNIT I:
Computer System and Operating System Overview: Overview of Computer System hardware, Operating System Objectives and functions, Evolution of operating System, Example Systems. Operating System Services, System Calls, System Programs.
Process Management: Process Description, Process Control, Process States, Cooperating Processes, Inter-process Communication.

UNIT II:
CPU Scheduling: Basic Concepts, Scheduling Criteria, Scheduling Algorithms and evaluation, Threads Overview, Threading issues.
Concurrency: Principles of Concurrency, Mutual Exclusion, Software and hardware approaches, Semaphores, Monitors, Message Passing, Classic problems of synchronization.

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

UNIT IV:
Memory Management: Basic concepts, Swapping, Contiguous memory allocation, Paging, Segmentation, Virtual memory, Demand paging, Page-replacement algorithms, Thrashing.
Secondary storage structure: Disk structure; Disk scheduling, Disk management, Swap-space Management, RAID structure, Stable-storage Implementation, Tertiary-Storage Structure
I/O systems: I/O hardware, Application I/O interface, Kernel I/O subsystem, Transforming I/O request to hardware operations, STREAMS

UNIT V:
File Management: File system-File concepts, Access methods, Directory structure, File system mounting, File sharing and Protection. Implementing file systems-File system structure and implementation, Directory implementation, Allocation methods, Free-space management, Efficiency and performance
Security: Security threats, Protection, Intruders, Viruses, Trusted System.

Course Outcomes:
Upon completion of this course, students should be able to:
1. Identify the System calls, protection and interrupts of any GOS.
2. Explain Input/output, disk access, file systems facilities any GOS()
3. Write application keeping Concurrency and synchronization Semaphores/monitors, sharedmemory, mutual exclusion Process scheduling services of an GOS in the mind.
4. The student will learn the responsibilities of OS in concerned with process management and memory management.

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

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

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

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

WEB TECHNOLOGIES AND COMPILER DESIGN LAB

Course Objectives:

1. Choose best technologies for solving web client/server problems
2. Create conforming web pages
3. Use Javascript for dynamic effects
4. Use Javascript to validate form input entry
5. Use appropriate client-side or Server-side applications

Hardware and software requirements:

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

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:

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 "IT" the catalogue for IT Books should be displayed in the Right frame.

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

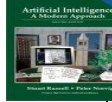| Logo	Web Site Name			
Home	Login	Registration	Catalogue	Cart
IT ECE EEE CIVIL	Description of the Web Site			

Fig 1.1

2) LOGIN PAGE:
This page looks like below:

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

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

Week-6:
4) CART PAGE:
The cart page contains the details about the books which are added to the cart.
The cart page should look like this:

Logo	Web Site Name			
Home	Login	Registration	Catalogue	Cart
IT ECE EEE CIVIL	Book name Java 2 XML bible	Price $35.5 $40.5 Total amount -	Quantity 2 1	Amount $70 $40.5 $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 7:

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 8:

Design a web page using CSS (Cascading Style Sheets)

Week 9:

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-10:

User Authentication :
Assume four users user1,user2,user3 and user4 having the passwords pwd1,pwd2,pwd3 and pwd4 respectively. Write a servlet for doing the following.
1. Create a Cookie and add these four user id's and passwords to this Cookie.
2. Read the user id and passwords entered in the Login form (week1)   and authenticate with the values (user id and passwords) available in the cookies.
If he is a valid user(i.e., user-name and password match) you should welcome him by name(user-name) else you should display " You are not an authenticated user ".
Use init-parameters to do this. Store the user-names and passwords in the web.xml and access them in the servlet by using the getInitParameters() method.

Week-11:

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 (week6).

Week-12:

Create tables in the database which contain the details of items (books in our case like Book name , Price, Quantity, Amount)) of each category. Modify your catalogue page (week 5)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-13:

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

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

COMPILER DESIGN LAB

Consider the following mini Language, a simple procedural high-level language, only operating on integer

data, with a syntax looking vaguely like a simple C crossed with Pascal. The syntax of the language is

defined by the following BNF grammar: <program> ::= <block>

<block> ::= { <variabledefinition><slist> } | { <slist> }

<variabledefinition> ::= int <vardeflist> ; <vardeflist> ::= <vardec> | <vardec>

, <vardeflist> <vardec> ::= <identifier> | <identifier> [<constant>] <slist> ::=

<statement> | <statement> ; <slist>

<statement> ::= <assignment> | <ifstatement> | <whilestatement> | <block> |

<printstatement> | <empty>

<assignment> ::= <identifier> = <expression> |

<identifier>[<expression>] = <expression>

<ifstatement> ::= if <bexpression> then <slist> else <slist> endif | if<bexpression> then

<slist> endif

<whilestatement> ::= while <bexpression> do <slist> enddo <printstatement> ::=

print (<expression>)

<expression> ::= <expression><addingop><term> | <term> | <addingop><term> <bexpression> ::=

<expression><relop><expression>

<relop> ::= < | <= | == | >= | > | != <addingop> ::= + | -

<term> ::= <term><multop><factor> | <factor> <multop> ::= * | /

<factor> ::= <constant> | <identifier> | <identifier> [<expression>] | (<expression>)

<constant> ::= <digit> | <digit><constant> <identifier> ::=

<identifier><letterordigit> | <letter> <letterordigit> ::= <letter> | <digit>

<letter> ::= a|b|c|d|e|f|g|h|i|j|k|l|m|n|o|p|q|r|s|t|u|v|w|x|y|z <digit> ::=

0|1|2|3|4|5|6|7|8|9

<empty> has the obvious meaning

Comments (zero or more characters enclosed between the standard C/Java-style comment brackets /

.../) can be inserted. The language has rudimentary support for 1-dimensional arrays. The declaration

int a[3] declares an array of three elements, referenced as a[0], a[1] and a[2]. Note also that you should

worry about the scoping of names.

A simple program written in this language is: { int a[3],t1,t2;

t1=2;

a[0]=1; a[1]=2; a[t1]=3; t2=-(a[2]+t1*6)/(a[2]-t1); if

t2>5 then

print(t2); else { int t3; t3=99; t2=-25;

print(-t1+t2*t3); /* this is a comment

on 2 lines */ } endif }

Experiments on week wise:

Week 14:

1. Design a Lexical analyzer for the above language. The lexical analyzer should ignore redundant spaces, tabs and newlines. It should also ignore comments. Although the syntax specification states that identifiers can be arbitrarily long, you may restrict the length to some reasonable value.
2. Implement the lexical analyzer using JLex, flex or lex or other lexical analyzer generating tools.

Week 15:

1. Design Predictive parser for the given language Design LALR bottom up parser for the above language.
2. Convert the BNF rules into Yacc form and Write code to generate abstract syntax tree.

Week 16:

1. Write program to generate machine code from the abstract syntax tree generated by the parser
2. Write a Yacc Program to construct a parse tree for the given grammar Write a Lex program to construct a lexical analyzer.

<u>Course Outcomes:</u>

Upon completion of this course, students should be able to:
1. Identify the entities responsible for implementing mark-up language standards.
2. Code and troubleshoot HTML and XHTML web pages, incorporating CSS and Scripts.
3. Incorporate multimedia (images, animation, sound, and movies) into web pages.
4. Demonstrate effective use of Dreamweaver to build and publish professional websites that employ best practices, adhere to current web standards, and pass Validation.

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

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

COMPUTER NETWORKS AND OPERATING SYSTEMS LAB

Course Objectives:

1. Build an understanding of the fundamental concepts of computer networking.
2. Familiarize the student with the basic taxonomy and terminology of the computer networking area.
3. Introduce the student to advanced networking concepts, preparing the student for entry Advanced courses in computer networking.
4. Allow the student to gain expertise in some specific areas of networking such as the design and maintenance of individual networks.
5. To provide an Understanding of the language translation peculiarities by designing complete translator for mini language.
6. To provide practical knowledge in automating the implementation of language translator.
7. Summarize the various approaches to solving the problem of mutual exclusion in an operating system.
8. Evaluate the trade-offs in terms of memory size (main memory, cache memory, auxiliary memory) and processor speed.
9. Demonstrate disk storage strategies, file strategies and I/O communication

COMPUTER NETWORKS LAB:

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

OPERATING SYTEMS LAB:
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

Course Outcomes:

Upon completion of this course, students should be able to:
1. Understand the Layered Architecture of Computer Networks.
2. Understand the operation of the main components of computer networks.
3. Learn various network protocols and algorithms.
4. Acquire the required skill to design simple computer networks.
5. Become familiar with security risks threatening computer networks.
6. Design and implement language processors in C/C++
7. Use tools (such as LEX and YACC) to automate parts of the implementation process.
8. Write application keeping Concurrency and synchronization Semaphores/monitors, shared memory, mutual exclusion Process scheduling services of an GOS in the mind.
9. The student will learn the responsibilities of OS in concerned with process management and memory management.

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

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

PRINCIPLES OF PROGRAMMING LANGUAGE

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

UNIT I:
Preliminary Concepts: Reasons for studying, concepts of programming languages, Programming domains, Language Evaluation Criteria, influences on Language design, Language categories. **Programming Paradigms**: Imperative, Object Oriented, functional Programming, Logic Programming. Programming Language Implementation – Compilation and Virtual Machines, programming environments.

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

UNIT III:
Data types: Introduction, primitive, character, user defined, array, associative, record, union, pointer and reference types, design and implementation uses related to these types. Names, Variable, concept of binding, type checking, strong typing, type compatibility, named constants, variable initialization. **Expressions and Statements:** Arithmetic relational and Boolean expressions, Short circuit evaluation mixed mode assignment, Assignment Statements, Control Structures – Statement Level, Compound Statements, Selection, Iteration, Unconditional Statements, guarded commands

UNIT IV:
Subprograms and Blocks: Fundamentals of sub-programs, Scope and lifetime of variable, static and dynamic scope, Design issues of subprograms and operations, local referencing environments, parameter passing methods, overloaded sub-programs, generic sub-programs, parameters that are sub-program names, design issues for functions user defined overloaded operators, co routines. Abstract Data types: Abstractions and encapsulation, introductions to data abstraction, design issues, language examples, C++ parameterized ADT, object oriented programming in small talk, C++, Java, C#, Ada 95 Concurrency: Subprogram level concurrency, semaphores, monitors, massage passing, Java threads, C# threads.

UNIT V:
Exception handling: Exceptions, exception Propagation, Exception handler in Ada, C++ and Java. Logic **Programming Language:** Introduction and overview of logic programming, basic elements of prolog, application of logic programming. Functional Programming Languages: Introduction, fundamentals of FPL, LISP, ML, Haskell, application of Functional Programming Languages and comparison of functional and imperative Languages.

Course Outcomes:
Upon completion of the course, the students are expected to:
1. Master using syntax-related concepts including context-free grammars, parse trees, Recursive descent parsing, printing, and interpretation.
2. Master analyzing semantic issues associated with function implementations, including Variable binding, scoping rules, parameter passing, and exception handling.
3. Master implementation techniques for interpreted functional languages.
4. Master using object oriented languages and be familiar with
   a) Design issues of object-oriented and functional languages.
   b) Language abstraction constructs of classes, interfaces, packages, and Procedures.
   c) Be familiar with implementation of object-oriented 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

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

III Year B.Tech CSE – II Sem   L   T/P/D   C
                                                                 3   1 / - / -   4

CRYPTOGRAPHY AND NETWORK SECURITY

Course Objectives:

1. Understand security concepts, Ethics in Network Security. Analyze the tradeoffs inherent in security, Understand the basic categories of threats to computers and networks and Comprehend security services and mechanisms in the network protocol stack
2. Discuss issues for creating security policy for a large organization, Defend the need for protection and security, and the role of ethical considerations in computer use
3. Describe efficient basic number-theoretic algorithms, including greatest common divisor, multiplicative inverse mod n, and raising to powers mod n.
4. Describe at least one public-key cryptosystem, including a necessary complexity-theoretic assumption for its security.
5. Create simple extensions of cryptographic protocols, using known protocols and cryptographic primitives.
6. Comprehend and apply authentication services and mechanisms, Describe the enhancements made to IPv4 by IPSec, Understand Intrusions and intrusion detection
7. Generate and distribute a PGP key pair and use the PGP package to send an encrypted e-mail message.
8. Understand security threats, and the security services and mechanisms to counter them, Comprehend and apply relevant protocol like SSL, SSH etc, Comprehend and apply email security services and mechanisms

UNIT I:
Introduction: Security Attacks, Services Mechanisms, A model for Internetwork security,   Classical Encryption   techniques, Fiestel Cipher Struct Data Encryption Standard, Block Cipher Design Principles and Modes of Operation, DES, Triple DES, AES, Evaluation criteria for AES, AES Cipher, Placement of Encryption Function, Traffic Confidentiality.

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

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

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

UNIT V:
System level security: Intrusion detection – password management – Viruses and related Threats – Virus Counter measures – Firewall Design Principles – Trusted Systems.

Course Outcomes:

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

1. Design a security solution for a given application.
2. Analyze a given system with respect to security of the system.
3. Should be able to identify network security threats and determine efforts to counter them
4. Should be able to write code for relevant cryptographic algorithms, Should be able to write a secure access client for access to a server
5. Should be able to send and receive secure mails, Should be able to determine firewall requirements, and configure a firewall.

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

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

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

III Year B.Tech CSE – II Sem   L   T/P/D   C
                                                                       3   1 /- / -   4

OBJECT ORIENTED ANALYSIS AND DESIGN

Course Objectives:

1. The students will be able to understand the need of models in the software development process and the basic review of object-oriented concepts will be given.
2. The student will be able to understand the Unified Modeling Language Principles and learns fundamental process pattern for object-oriented analysis and design.
3. Learn how to derive analysis model from use case requirements.
4. Learn how to model event-driven state of objects. Learn how to transform analysis model into design model that is a specification for implementation.
5. Apply the universal process pattern to object-oriented design using UML.
6. Identify subsystems, interfaces and collaborations. Apply collaborations to internal subsystem 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 Behavioral Modeling-I: Use cases, Use case Diagrams, Activity Diagrams.
Basic Structural Modeling: Classes, Relationships, common Mechanisms, and diagrams.

UNIT III:
Advanced Structural Modeling: Advanced classes, advanced relationships, Interfaces, Types and Roles, Packages.
Class & Object Diagrams: Terms, concepts, modeling techniques for Class & Object Diagrams.
Basic Behavioral Modeling-II: Interactions, Interaction diagrams

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

UNIT V:
Architectural Modeling: Component, Deployment, Component diagrams and Deployment diagrams.
Case Study: The Unified Library application.

Course Outcomes:
Upon completion of the course, the students are expected to:
In Software development life cycle **designing** is a crucial phase and at the end of this course student will be able to

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

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

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

III Year B.Tech CSE – II Sem   L T/P/D C
                                                3   1/- / - 4

MOBILE COMPUTING

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

UNIT I:
Introduction to Mobile Communications and Computing: Mobile Computing (MC): Introduction to MC, Novel applications, Limitations, and Architecture.
GSM: Mobile services, System architecture, Radio interface, Protocols, Localization and calling, Handover, Security, and New data services.

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

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

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

UNIT V:
Database Issues: Hoarding techniques, caching invalidation mechanisms.
Data Dissemination: Communications asymmetry, classification of new data delivery mechanisms, push based mechanisms, pull-based mechanisms, hybrid mechanisms, selective tuning (indexing) techniques.

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

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

REFERENCE BOOKS:
1. "Mobile Computing Principles: Designing and Developing Mobile Applications with UML and XML", Reza Behravanfar, Cambridge University Press, Oct2004.
2. "Mobile Computing", Raj Kamal, Oxford University Press ,2007
3. "Mobile and Wireless Design Essentials", Martyn Mallick, Wiley DreamTech.

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

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

DATA WAREHOUSING AND DATA MINING

Course Objectives:
1. Understand the fundamental processes
2. Understand the concepts and techniques of data mining
3. Develop an appreciation for the inherent complexity of the data-mining task
4. Advance relevant programming skills
5. Advance research skills through the investigation

UNIT I:
Introduction: Fundamentals of data mining, KDD process, Data Mining Functionalities, Classification of Data Mining systems, Data Mining Task primitives, Integration of a Data mining System with a Database or a Data warehouse systems, Major issues in Data Mining.
Data Preprocessing: Needs for Preprocessing the Data, Data Cleaning, Data Integration and Transformation, Data Reduction, Descretization and Concept Hierarchy Generation.

UNIT II:
Data Warehouse and OLAP Technology for Data Mining: Data Warehouse, Multidimensional Data Model, Data Warehouse Architecture, Data Warehouse Implementation, From Data Warehousing to Data Mining.
Data Cube computation and Data Generalization: Efficient Methods for Data Cube Computation, Further Development of data cube and OLAP Technology, Characterization and Discrimination: Attribute-Oriented Induction.

UNIT III:
Mining Frequent, Associations and Correlations: Basic Concepts, Frequent Itemset mining methods, Mining Multilevel Association Rules from Transaction Databases, Mining Multidimensional Association Rules from Relational Databases and Data Warehouses, From Association Mining to Correlation Analysis, Constraint-Based Association Mining.

UNIT IV:
Classification and Prediction: Issues Regarding Classification and Prediction, Classification by Decision Tree Induction, Bayesian Classification, Classification by Back propagation, Classification Based on Concepts from Association Rule Mining, Other Classification Methods, Prediction, Classifier Accuracy.

UNIT V:
Cluster Analysis Introduction: Types of Data in Cluster Analysis, A Categorization of Major Clustering Methods, Partitioning Methods, Density-Based Methods, Grid-Based Methods, Model-Based Clustering Methods, Outlier Analysis.
Mining Complex Types of Data: Mining Spatial Databases, Mining Multimedia Databases, Mining Time-Series and Sequence Data, Mining Text Databases, Mining the World Wide Web.

Course Outcomes:
Upon completion of the course, the students are expected to:
1. Apply database analysis and design techniques to the concept of Data Warehousing.
2. Construct a data model for a case sample Data Warehouse project.
3. List and describe the core components of a Data Mart.
4. Summarize the rational and key benefits of using Data Martsand Construct a data model representing a Data Mart strategy.
5. Explain the concept of Data Mining and List and describe the core components of a Data Mining initiative.
6. Summarize the tools and approaches used in support of Data Mining and Analyze sample data and identify correlations. To introduce advanced topics in data mining, applications and trends in data mining

TEXT BOOKS:
1. Data mining: Concepts and Techniques, Jiawei Han and Micheline Kamber,
   2nd Edition, Elsevier, 2006.

REFERENCE BOOKS:

1. Introduction to data mining, Pang-Ning Tan, Michael Steinbach, Vipin Kumar, Addison-Wesley, 2005. ISBN : 0321321367.
2. Mining Introductory and advanced topics –MARGARET H DUNHAM, PEARSON EDUCATION
3. Lecture Notes on Data Mining, Micheal W.Berry, Murray Browne, World Scientific Publishing Co
4. Data Mining Techniques – ARUN K PUJARI, University Press.
5. Data Mining for Association Rules and Sequential Patterns: Sequential and Parallel Algorithms, Jean-Marc Adamo, ISBN: 0387950486
6. The Data Warehouse Life cycle Tool kit – RALPH KIMBALL WILEY STUDENT EDITION.
7. Data Warehousing in the Real World – SAM ANAHORY & DENNIS MURRAY. Pearson Edn Asia.

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

III Year B.Tech CSE-II SEM   L   T/P/D   C
                                                                  4   1/ -/-   4
COMPUTER GRAPHICS AND ANIMATION APPLICATION
(Open Elective)

Course Objectives:
 1. To provide students with a foundation in graphics applications programming and To introduce students with fundamental concepts and theory of computer graphics
2. To give basics of application programming interface (API) implementation based on graphics pipeline approach
 To provide students with an overview of the key concepts of digital production of animation and visual effects with reference to workflow, people and technology
3. To give students knowledge of the issues pertaining to digital data, To give students practical experience in the production of 2D computer animation.
4. To provide students with an understanding of the algorithms and theories that forms the basis of computer graphics and modeling
 5. To enable students to acquire practical knowledge and experience of modeling technologies and techniques
6. To give students skills necessary in the production of 3D models, lighting, and rendering.
7. To provide students with an understanding of the fundamental issues, technologies and techniques involved in postproduction work.
8. To provide students with an understanding of some techniques that can be used to enhance standard composite shots
9. To enable students to appreciate the complexities of working with particle, lighting and 2D morphing effects
10. To provide students with the necessary knowledge and skills to extend core compositing work using visual effects.

UNIT I:
INTRODUCTION
Introduction: Usage of Graphics and their applications, Presentation Graphics- Computer Aided Design- Computer Art- Entertainment- Education and Training- Visualization- Image Processing- Graphical User Interfaces Over view of Graphics systems: Video Display Devices- Raster Scan systems-random scan systems- Graphics monitors and workstations-Input devices-hard copy devices- Graphics software
Output primitives: Points and Lines-Line Drawing Algorithms- Loading the Frame buffer- Line function- Circle- Generating Algorithms- Ellipse Generating Algorithms- Other Curves- Parallel Curve Algorithms-Curve Functions-Pixel Addressing- Filled Area Primitives-Filled Area Functions- Cell Array- Character
Generation Attributes of Output Primitives: Line and Curve Attributes-Color and Gray scale levels- Area Fill Attributes- Character Attributes-Bundled Attributes- Inquiry Functions-Ant aliasing

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

UNIT III:
Three Dimensional Object Representation Three dimensional concepts;
Three dimensional object representations - Polygon surfaces - Polygon tables – Plane equations - Polygon meshes; Curved Lines and surfaces, Quadratic surfaces; Blobby objects; Spline representations - Bezier curves and surfaces - B-Spline curves and surfaces.

UNIT IV:
Three Dimensional Geometrical Transformation and Viewing: Three dimensional geometric and modeling transformations - Translation, Rotation, Scaling, composite transformations;

Three dimensional viewing - viewing pipeline, viewing coordinates, Projections, Clipping; Visible surface detection methods: Depth buffer, scan line, Depth sorting, BSP-tree methods, Area sub-division and octree methods.

UNIT V:
Computer Animation: Design of Animation Sequence, General computer Animation functions, Raster

animation, Computer animation languages, key frame systems, motion specifications

Course Outcomes:

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

1. Upon successful completion of the course, students will- gain a proficiency with OpenGL, a standard specification defining a cross-language, cross-platform API for writing applications that produce 2D and 3D computer graphics
2. Learn the principles and commonly used paradigms and techniques of computer graphics
3. Develop a facility with the relevant mathematics of computer graphics
4. be able to write basic graphics application programs including animation
5. Understand the basic aspects of 2D image representations and transformation

TEXT BOOKS:

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

REFERENCE BOOKS:

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

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

III Year B.Tech CSE-II SEM   L   T/P/D   C
                                                           4   1/ -/ -   4

SOFTWARE TESTING METHODOLOGIES
(Open Elective)

Course Objectives:
1. The types of Bugs, Testing levels
2. Flow graph and Path testing, application of path testing
3. Knowledge on Transaction flow testing alpha, beta and domain testing.
4. Logic based testing, state testing, testability tips. Good bad graphs
5. Know the concept of Graph matrices and application, test management

UNIT I:
Introduction: Purpose of testing-Dichotomies-Software Testing Principles- Bugs, consequences of bugs, Taxonomy of bugs -The Tester's Role in a Software Development Organization-Black box testing and white box testing- Defects -Cost of defects- Defect Classes- Defect Examples, software testing life cycle.

UNIT II:
Flow graphs and Path testing: Basics concepts of path testing-predicates-path predicates and achievable paths-path sensitizing- path instrumentation, application of path testing.
Transaction Flow Testing: Transaction flows- transaction flow testing techniques-**Dataflow testing**: Basics of dataflow testing - strategies in data flow testing – application of data flow testing.

UNIT III:
Test Case Design Strategies: Using Black Box Approach to Test Case Design - Random Testing – Requirements based testing – Boundary Value Analysis – Equivalence Class Partitioning– Compatibility testing – User documentation testing – Domain testing.
Alpha, Beta Tests – Usability and Accessibility testing – Configuration testing - Compatibility testing – Testing the documentation.

UNIT IV:
Paths, Path products and Regular expressions: Path products & path expression-reduction procedure- applications- regular expressions & flow anomaly detection. **Logic Based Testing:** Overview decision tables-path expressions, k-v charts- State- State Graphs and Transition testing: State graphs- good & bad stategraphs-statetesting.
State, state graphs and transition testing: state graphs, good and bad state graphs, state testing, testability tips

UNIT- V
Graph Matrices and applications: motivational over view, matrix of graph, relations, power of matrix, node reduction algorithm.
People and organizational issues in testing: Organization structures for testing teams – testing services - Test Planning – Test Plan Components – Test Plan Attachments – Locating Test Items – test management – test process- bug detection life cycle.

Course Outcomes:
1. Apply fundamental knowledge of Testing in Real time scenarios.
2. Test a simple application.
3. Understand and Applying the Techniques in Software Development Life cycle

TEXT BOOKS:
1. "Software Testing – Principles and Practices", Srinivasan Desikan and Gopalaswamy Ramesh, Pearson education, 2006.
2. "Software Testing Techniques", Boris Beizer, 2nd Edition, Van Nostrand Reinhold, New York, 1990

REFERENCE BOOKS:
1. "Software Testing", Ron Patton, Second Edition, Sams Publishing, Pearson education, 2007
2. "Software Testing – Effective Methods, Tools and Techniques", Renu Rajani, Pradeep Oak, Tata McGraw Hill, 2004.
3. "Software Testing in the Real World – Improving the Process", Edward Kit, Pearson Education, 1995.
4. "Foundations of Software Testing – Fundamental algorithms and techniques", Aditya P. Mathur, Dorling Kindersley (India) Pvt. Ltd., Pearson Education, 2008

MALLAREDDY ENGINEERING COLLEGE

(Autonomous)

III Year B.Tech CSE-II SEM   **L   T/P/D   C**
                                                               4   1/ -/ -   4

INTELLECTUAL PROPERTY RIGHTS AND CYBER LAW
(Open Elective)

Course Objectives:
1. To make students familiar with Intellectual Property Rights.
2. To understand innovations in engineering and other domains.
3. To be familiar with patents, copyrights and various acts related to innovations.

UNIT I:
Introduction – Invention and Creativity – Intellectual Property (IP) – Importance – Protection of IPR – Basic types of property i. Movable Property ii. Immovable Property and iii. Intellectual Property.

UNIT II:
IP – Patents – Copyrights and related rights – Trade Marks and rights arising from Trademark registration – Definitions – Industrial Designs and Integrated circuits – Protection of Geographical Indications at national and International levels – Application Procedures..

UNIT III:
International convention relating to Intellectual Property – Establishment of WIPO – Mission and Activities – History – General Agreement on Trade and Tariff (GATT).

UNIT IV:
Indian Position Vs WTO and Strategies – Indian IPR legislations – commitments to WTO-Patent Ordinance and the Bill – Draft of a national Intellectual Property Policy – Present against unfair competition.

UNIT V:
Case Studies on – Patents (Basumati rice, turmeric, Neem, etc.) – Copyright and related rights – Trade Marks – Industrial design and Integrated circuits – Geographic indications – Protection against unfair competition.

Course Outcomes:
Upon completion of the course, the students are expected to:
1. To define various terms related to Intellectual Property Rights.
2. To understand the process of patent, copyrights and related procedures.
3. To analyse the situation of IPR in the Indian context with that of global scenario.
4. To understand the patenting process through various case studies.

TEXT BOOKS
1. Subbaram N.R. "Handbook of Indian Patent Law and Practice ", S. Viswanathan Printers and Publishers Pvt. Ltd., 1998.

REFERENCES
1. P. Narayanan; Law of Copyright and Industrial Designs; Eastern law House, Delhi, 2010
2. Prabhuddha Ganguli: ' Intellectual Property Rights" Tata Mc-Graw –Hill, New Delhi
3. M.Ashok Kumar and Mohd.Iqbal Ali: "Intellectual Property Right" Serials Pub.

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

III Year B.Tech CSE-II SEM   **L T/P/D C**
                                                                                                        4 1/-/-   4

QUANTITATIVE APTITUDE AND LOGICAL REASONING

Course Objectives:
After thorough learning of Quantitative Aptitude and Reasoning, a student:
1. Will be able to critically evaluate various real life situations by resorting to Analysis of key issues and factors.
2. Will be able to read between the lines and understand various language structures.
3. Will be able to demonstrate various principles involved in solving mathematical problems and thereby reducing the time taken for performing job functions.

UNIT I:
 Simple equations- Definition , Formation of simple equations, Ages, Fractions and Digits, Ratio and Proportion- Mean proportional and Continued Proportion, Variation, Percentages, Profit and loss, Partnership, Simple interest and Compound interest, Quadratic equations, progressions- Arithmetic Progression, Geometric Progression, Harmonic Progression

UNIT II:
Numbers, Time and Distance- Problems on trains , Relation between speed, distance and time, average speed, relative speed, Problems on boats and streams, Problems on circular tracks, Problems on races, Time and Work- Problems on Unitary method, Problems on alternate days, Problems on Pipes and Cisterns

UNIT III:
Clocks, Calendars ,Averages, Mixtures and allegation, Data Interpretation- Problems on tabular form, Problems on Line Graphs, Problems on Bar Graphs, Problems on Pie Charts, Data Sufficiency, Menstruation- Areas, Volumes and Surface Areas of different Solids, Permutation and Combinations, Probability

UNIT IV:
 Analytical Reasoning – seating Arrangement- Linear arrangement, Circular arrangement, Double line-up, Blood relations, Cubes- Problems on cuboids, Problems on painted cuboids, Problems on diagonal cuts, Deductions- Venn diagram method, syllogism method, Connectives- simple statement, compound statement

UNIT V:
Binary Logic, Number and letter series, Odd man out- letter , verbal, Non Verbal Coding and decoding, Direction sense, Critical Reasoning- assumptions, Conclusions, inferences strengthening and weakening of arguments Lateral reasoning puzzle

TEXT BOOKS:
1. GL Barrons, Mc Graw Hills, Thorpe's verbal reasoning, LSAT Materials
2. R S Agarwal, S Chand , 'A modern approach to Logical reasoning'
3. R S Agarwal, S Chand, 'Quantitative Aptitude'

REFERENCE BOOKS:
1. Quantitative Aptitude - G. L BARRONS
2. Quantitative Aptitude - Abhijit Guha Mc Graw Hills

MALLAREDDY ENGINEERING COLLEGE

(Autonomous)

III Year B.Tech CSE-II SEM   L   T/P/D C
                                                                 -   -/ 3 /- 2

DATA MINING LAB

Course Objectives:

1. To introduce students to the basic concepts and techniques of Data Mining.
2. To develop skills of using recent data mining software for solving practical problems.
3. To gain experience of doing independent study and research.
4. To learn to use the Weak machine learning toolkit
5. To perform classification on data sets using the Weka machine learning toolkit
6. Performing data preprocessing tasks for data mining in Weka

DMDW Lab

1. Introduction to the Weka machine learning toolkit – Part 1
2. Introduction to the Weka machine learning toolkit – Part 2
3. Classification using the Weka toolkit
4. Performing data preprocessing for data mining in Weka
5. Performing clustering in Weka
6. Association rule analysis in Weka

Week 1:

Title: Introduction to the Weka machine learning toolkit
Aim: To learn to use the Weak machine learning toolkit

Requirements

How do you load Weka?

1. What options are available on main panel?
2. What is the purpose of the the following in Weka:
    1. The Explorer
    2. The Knowledge Flow interface
    3. The Experimenter
    4. The command-line interface
3. Describe the **arff**file format.
4. Press the Explorer button on the main panel and load the weather dataset and answer the following questions
    1. How many instances are there in the dataset?
    2. State the names of the attributes along with their types and values.
    3. What is the class attribute?
    4. In the histogram on the bottom-right, which attributes are plotted on the X,Y- axes? How do you change the attributes plotted on the X,Y-axes?
    5. How will you determine how many instances of each class are present in the data
    6. What happens with the Visualize All button is pressed?
    7. How will you view the instances in the dataset? How will you save the Changes?

Week 2:

1. What is the purpose of the following in the Explorer Panel?
    1. The Preprocess panel
        1. What are the main sections of the Preprocess panel?
        2. What are the primary sources of data in Weka?
    2. The Classify panel
    3. The Cluster panel
    4. The Associate panel

5. The Select Attributes panel
6. The Visualize panel.
2. Load the weather dataset and perform the following tasks:
   1. Use the unsupervised filter Remove With Values to remove all instances where the attribute 'humidity' has the value 'high'?
   2. Undo the effect of the filter.
   3. Answer the following questions:
      1. What is meant by filtering in Weka?
      2. Which panel is used for filtering a dataset?
      3. What are the two main types of filters in Weka?
      4. What is the difference between the two types of filters? What is the difference between and attribute filter and an instance filter?
3. Load the iris dataset and perform the following tasks:
   1. Press the Visualize tab to view the Visualizer panel.
   2. What is the purpose of the Visualizer?
   3. Select one panel in the Visualizer and experiment with the buttons on the panel.

Week 3:

Title: Classification using the Weka toolkit

Aim: To perform classification on data sets using the Weka machine learning toolkit

Requirements

1. Load the 'weather.nominal.arff' dataset into Weka and run Id3 classification algorithm**.** Answer the following questions
   1. List the attributes of the given relation along with the type details
   2. Create a table of the weather.nominal.arff data
   3. Study the classifier output and answer the following questions
      1. Draw the decision tree generated by the classifier
      2. Compute the entropy values for each of the attributes
      3. What is the relationship between the attribute entropy values and the nodes of the decision tree?
   4. Draw the confusion matrix? What information does the confusion matrix provide?
   5. Describe the following quantities:
      1. TP Rate   2. FP Rate
      3. Precision   4. Recall

Week 4:

Title : Performing data preprocessing tasks for data mining in Weka

Aim : To learn how to use various data preprocessing methods as a part of the data mining

Requirements
Application of Discretization Filters
1. Perform the following tasks
   1. Load the 'sick.arff' dataset
   2. How many instances does this dataset have?
   3. How many attributes does it have?
   4. Which is the class attribute and what are the characteristics of this attribute?
   5. How many attributes are numeric? What are the attribute indexes of the numeric attributes?

Week 5:

Title: Performing clustering using the data mining toolkit

Aim: To learn to use clustering techniques

Requirements

1. Perform the following tasks:
   1. Load the 'bank.arff' data set in Weka.
   2. Write down the following details regarding the attributes:

1. names
2. types
3. Values.
3. Run the Simple K-Means clustering algorithm on the dataset
   1. How many clusters are created?
   2. What are the number of instances and percentage figures in each cluster?
   3. What is the number of iterations that were required?
   4. What is the sum of squared errors? What does it represent?
   5. Tabulate the characteristics of the centroid of each cluster.
   6. Visualize the results of this clustering (let the X-axis represent the cluster name, and the Y-axis represent the instance number)
   1. Is there a significant variation in age between clusters?
   2. Which clusters are predominated by males and which clusters are predominated by females?
   3. What can be said about the values of the region attribute in each cluster?
   4. What can be said about the variation of income between clusters?
   5. Which clusters are dominated by married people and which clusters are dominated by unmarried people?
   6. How do the clusters differ with respect to the number of children?
   7. Which cluster has the highest number of people with cars?
   8. Which clusters are predominated by people with savings accounts?
   9. What can be said about the variation of current accounts between clusters?
   10. Which clusters comprise mostly of people who buy the PEP product and which ones are comprised of people who do not buy the PEP product?

Week 6:

Title Using Weka to determine Association rules

Aim: To learn to use Association algorithms on datasets

Requirements

1. Perform the following tasks
   1. Define the following terms
      1. item and item set
      2. Association
      3. Association rule
      4. Support of an association rule
      5. Confidence of an association rule
      6. Large item set
      7. Association rule problem
   2. What is the purpose of the Apriori Algorithm
2. Perform the following tasks:
   1. Load the 'vote.arff' dataset
   2. Apply the Apriori association rule
   3. What is the support threshold used? What is the confidence threshold used?
   4. Write down the top 6 rules along with the support and confidence values.
   5. What does the figure to the left of the arrow in the association rule represent?
   6. What does the figure to the right of the arrow in the association rule represent?
   7. For rule 8, verify that numerical values used for computation of support and confidence is in accordance with the data by using the Preprocess panel. Then compute the support.

   1. Load the dataset 'weather.nominal.arff'.
   2. Apply the Apriori association rule
      1. Consider the rule "temperature=hot ==> humidity=normal." Compute the support and confidence for this rule.
      2. Consider the rule "temperature=hot humidity=high ==> windy=TRUE."
         Consider the support and confidence for this rule.
      3. Is it possible to have a rule like the following rule:
         "outlook=sunny temperature=cool" ==> humidity=normal play=yes
4. Perform the following tasks:
   1. Load the bank-data.csv file.

2. Apply the Apriori association rule algorithm. What is the result? Why?

3. Apply the supervised discretization filter to the age and income attributes.

4. Run the Apriori rule algorithm

5. List the rules that were generated.

Course Outcomes:

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

1. At the end of the semester, successful students will have fundamental understanding of data mining algorithms and their applications.

2. Consequently they will have necessary skills to effectively apply data mining techniques to solve real business problems.

TEXT BOOKS:

1. Data mining: Concepts and Techniques, Jiawei Han and Micheline Kamber, 2nd Edition, Elsevier, 2006.

REFERENCE BOOKS:

1. SQL-PL/SQL by Ivan Bayrose
2. Data Warehousing Fundamentals By Paulraj
3. Data Mining Introductory & Advanced Topic by Margaret H. Dunham
4. Data Mining Techniques – ARUN K PUJARI, University Press.
5. Data Mining for Association Rules and Sequential Patterns: Sequential and Parallel Algorithms, Jean-Marc Adamo, ISBN: 0387950486

MALLAREDDY ENGINEERING COLLEGE

(Autonomous)

III Year B.Tech CSE-II SEM   L T/P/D C
                                                                                      - -/ 3 /- 2

ADVANCED ENGLISH COMMUNICATION SKILLS LAB

Course Objectives:

1. To help the students understand the requisites to successfully deliver as professionals and the challenges they need to encounter
2. To help them make a smooth transition from the academic world to the professional world
3. To refine the style of individual communication
4. To broaden and raise awareness about the dynamics of communication in the work environment
5. To integrate the learning experience with the functional areas of communication
6. Helping the students to become industry ready

Methodology:

Facilitator's role: Since classroom learning augments thinking process, helping them to develop written, spoken and non verbal communication, the facilitator / Faculty would briefly discuss the topics with the students and later on guide them while the students involve in activities, writing work and while making presentations. The facilitator is required to design a lot of practical/industry oriented project works for the students
*Students are required to participate, perform, write and submit the work in the form of written documents or Power Point Presentations to hone their spoken written and non verbal communication skills . Students are to take up field work and submit the project work.

UNIT I:

Industry awareness- Introduction to the world of work- Collection of information about various sectors, companies, enterprises, organizations and conglomerates; field visit to the industry they wish to work for
 Instruction: Here the students are required to work in teams- Team players-participating and responding, team leader -delegates, plans and involves all the team members, Challenges the team faces -the report presented in the written form and making presentation

UNIT II:
Job hunt process

- SWOT analysis, correspondence and browsing the internet , job application-cover letter drafting, drafting a winning resume', types of resume's -electronic, video and printed resume's
   • Instruction: Students are required to prepare their video resume which will be assessed by the faculty member.

UNIT III:

Group Discussion- Initiators- Contributor-Informer-Team Leader-Motivator-Creative Contributor , Importance of , Non verbal communication -eye contact, voice characters, posture, gestures, do's and don'ts, Role play and Simulation- Learners assuming the roles of characters and participating in Group discussion, analysis, or prediction with strictly defined goals.

UNIT IV:

Interview skills- Preparing for the interview, types of interviews, interview session, importance of non verbal communication during the interview, do's and don'ts of interview, follow up and thanking letter. FAQ's.

UNIT V:

Office etiquette- Formal Conversation, elevator etiquette, table manners, office attire- do's and don'ts, gossips and rumors, greetings and meetings, speaking to seniors and handshakes , offering and taking visiting cards.

UNIT VI:
E- Correspondence and Email etiquette

Common web mail services, yahoo, gmail etc, fields to pay attention- To:, Cc:, Bcc:, Reply All, Subject, Salutation, Body, Signature, Font, Caps Lock , Highlight, The 'KISS' strategy(Keep It Simple and Short,)Points to remember while signing off, Introduction to Technical Vocabulary
   • This unit is purely for internal assessment/evaluation

UNIT VII:

Report writing: types of report, project report writing, technical reports, importance of pictorial presentation- graphs , diagrams etc

Instruction: The students are required to work on a project. Field work and collection of information , prepare a project report, present the project in the form of Power Point Presentation and written document. This report will be given weightage during the external examination

Course Outcome:
Since the communication skills cannot be taught but be developed through practice the student will be competent communicator through application and the use of the concepts and activities in different units.

REFERENCE BOOKS:
1. Handbook of practical Communication Skills by Chrissie Wright
2. How to win friends and influence people by Dale |Carnegie
3. Skills with people by Les Giblin
4. Bringing out the best in people by Aubrey Daniels
5. The definitive book on body Language by Barbara and Allan Pease
6. Just Listen :Discover the Secret to getting through to absolutely anything by Mark Goulstone
7. Ten Much by A G Krishna Murthy
8. Communication skills for Professionals by Cambridge Publishers
9. Good practice Student's book on Communication skills by Cambridge Publishers
10. Word Power Made Easy by Norman Lewis
11. Effective Technical Communication by Ashraf Rizbi
12. Resume Magic: Trade Secrets of a Professional Resume by Susan Britton Whitcomb

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

IV Year B.Tech CSE-I SEM   L   T/P/D C
                                                                     4   1/ -/ -   4

APPLICATION PROGRAMMING

UNIT I:
MS.NET Framework Introduction: The .NET Framework - an Overview- Framework Components - Framework Versions-Types of Applications which can be developed using MS.NET - MS.NET Base Class Library - MS.NET Namespaces - MSIL / Metadata and PE files- Common Language Runtime (CLR) - Managed Code -MS.NET Memory Management / Garbage Collection -Common Type System (CTS) - Common Language Specification (CLS)- Types of JIT Compilers-Security Manager . Building C# Applications Using csc.exe, Building .NET Applications Using Notepad++, Building .NET Applications Using Visual C# 2010 Express, Building .NET Applications Using Visual Studio 2010.

UNIT II:
Developing Console Application: Introduction to Project and Solution in Studio- Entry point method - Main. - Compiling and Building Projects -Using Command Line Arguments -Importance of Exit code of an application- Different valid forms of Main-Compiling a C# program using command line utility CSC.EXE-Datatypes - Global, Stack and Heap Memory- Common Type System-Reference Type and Value Type- Data types & Variables Declaration- Implicit and Explicit Casting- Checked and Unchecked Blocks – Overflow Checks-Casting between other data types-Boxing and Unboxing-Enum and Constant-Operators-Control Statements - Working with Arrays -Working with Methods-Pass by value and by reference and out parameters

UNIT III:
Object Oriented Programming: Object -Lifecycle of an Object-relationship between Class and Object-Define Application using Objects-Principles of Object Orientation-Encapsulation –Inheritance-Polymorphism-Encapsulation is binding of State and Behavior together- understand the difference between object and reference- Working with Methods, Properties -Copy the reference in another reference variable- Abandoning the object- Constructor & Destructor-Working with "static" Members- Inheritance- Inheritance and "is a" relationship-Protected Keyword -Constructor in Inheritance -Type Casting of Reference Types- Static and Dynamic Binding and Virtual Methods-Abstract Class-Object as Parent of all classes-Namespaces-Access Specifiers-Interface & Polymorphism-Syntax for Implementation of Interface- Explicit Implementation of Interface members-Types of Inheritance-Overloading-Overriding- Partial Classes.
Exception Handling: Exception -Rules for Handling Exception - Exception classes and its important properties -Understanding & using try, catch keywords -Throwing exceptions-Importance of finally block- "using" Statement -Writing Custom Exception Classes

UNIT IV:
Delegates And Events: Understanding the .NET Delegate type, defining a Delegate Type in C#, The System. Multicast Delegate and System. Delegate Base Classes, The Simple Possible Delegate Example, Sending Object State Notification using Delegates-chat application-anonymous
PROGRAMMING WITH .NET ASSEMBLIES: Configuring .NET Assemblies, defining Custom Namespaces, The role of .NET Assemblies, Understanding the Format of a .NET assembly, Building and Consuming a Single-File Assembly, Building and Consuming a Multifile Assembly, Understanding Private Assembly, Understanding Shared Assembly, Consuming a Shared Assembly, Configuring Shared assemblies, Understanding Publisher Policy assemblies, Understanding the <codebase> Element, The System. Configuration Namespace.

UNIT V:
ADO.NET PART - I: The Connected Layer: A High-Level Definition of ADO.NET, Understanding ADO.NET Data Provider, Additional ADO.NET Namespaces, The Types of the System.Data.namespace, Abstracting Data Providers Using Interfaces, Creating the Auto Lot Database, The ADO.NET data Provider Factory Model, Understanding the Connected Layer of ADO.NET, Working with Data Readers, Building a reusable Data Access Library, Creating a Console UI-Based Front End, Understanding Database Transactions.
ADO.NET PART - II: Disconnected Layer: Understanding the Disconnected Layer of ADO.NET, Understanding the Role of the Dataset, Working with DataColumns, Working with Datarows, Working with DataTables, Binding with Data Adapters, Adding Disconnected Functionality to AutoLotDAL.dll, Multitabled Dataset Objects and Data Relationships, the Windows Forms Database Code into a Class Library, Programming with LINQ to DataSet.

TEXT BOOKS:
1.Andrew Troelsen (2010), Pro C# and the .NET 4 Platform, 5th edition, Springer (India) Private Limited, New Delhi, India.

REFERENCE BOOKS:

1.E. Balagurusamy (2004), Programming in C#, 5th edition, Tata McGraw-Hill, New Delhi, India.
2.Herbert Schildt (2004), The Complete Reference: C#, Tata McGraw-Hill, New Delhi, India.
3.Simon Robinson, Christian N agel, Karli Watson, Jay Gl (2006), Professional C#, 3rd edition, Wiley & Sons, India.

Websites

http://www.c-sharpcorner.com/beginners/
http://www.tutorialspoint.com/csharp/

MALLAREDDY ENGINEERING COLLEGE

(Autonomous)

IV Year B.Tech CSE-I SEM   L T/P/D C
                                                                     4 1/ -/ -   4

LINUX PROGRAMMING

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

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

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

UNIT III:
Files: File Concept, File System Structure, Inodes, File Attributes, File types, Library functions,the standard I/O and formatted I/O in C, stream errors, kernel support for files, System calls, file descriptors, low level file access – File structure related system calls(File APIs), file and record locking, file and directory management – Directory file APIs, Symbolic links & hard links.
Process – Process concept, Kernel support for process, process attributes, process control - process creation, waiting for a process, process termination, zombie process, orphan process, Process APIs.

UNIT IV:
Signals– Introduction to signals, Signal generation and handling, Kernel support for signals, Signal function, unreliable signals, reliable signals, kill, raise , alarm, pause, abort, sleep functions.
Interprocess Communication: Introduction to IPC, Pipes, FIFOs, Introduction to three types of IPC-message queues, semaphores and shared memory. Message Queues-Kernel support for messages, Unix system V APIs for messages, client/server example.

UNIT V:
Semaphores-Kernel support for semaphores, Unix system V APIs for semaphores. Shared Memory- Kernel support for shared memory, Unix system V APIs for shared memory, semaphore and shared memory example.
Sockets: Introduction to Sockets, Socket Addresses, Socket system calls for connection oriented protocol and connectionless protocol, example-client/server programs.

Course Outcomes:
Upon completion of this course, students should be able to:
1. Understand the how to work with Linux commands
2. Understand the how to write Shell Scrips
3. Learn various System Calls in linux
4. Become familiar with Write shell scripts to automate various tasks

TEXT BOOKS:
1. Unix System Programming using C++, T.Chan, PHI.
2. Unix Concepts and Applications, 4th Edition, Sumitabha Das, TMH,2006.
3. Beginning Linux Programming, 4th Edition, N.Matthew, R.Stones,Wrox, Wiley India Edition,rp-2008

REFERENCE BOOKS:
1. Linux System Programming, Robert Love, O'Reilly, SPD.
2. Advanced Programming in the Unix environment, 2nd Edition, W.R.Stevens, Pearson Education.
3. Unix Network Programming ,W.R.Stevens,PHI.
4. Unix for programmers and users, 3rd Edition, Graham Glass, King Ables, Pearson Education

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

IV Year B.Tech CSE-II SEM   L T/P/D C
                                                                3   -/-/- 4

MANAGEEMNT 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 Organizational Structures : Basic concepts related to Organization - Departmentation and Decentralization, Types of mechanistic and organic structures of organization (Line organization, Line and staff organization, functional organization, Committee organization, matrix organization, Virtual Organization, Cellular Organization, team structure, boundary less 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.

    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 IV:

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.

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

UNIT V:

Strategic Management : 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.

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.

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

IV Year B.Tech CSE-I SEM   L   T/P/D C
                                                                  3   1/ - / - 4

CLOUD COMPUTING

Course Objectives:
1. Knowledge of Parallel computing architectures such as vector processing, symmetric multi processing
2. Importance and Details of Service oriented architecture and Virtualization
3. Know the Limitations, Key Characteristics, challenges of cloud computing
4. Different services offered by Cloud computing
5. What exactly is Saas, Paas, Iaas
6. Procedure involved in building the cloud networks

UNIT I:
Understanding cloud computing: Cloud Computing – History of Cloud Computing – Cloud Architecture – Cloud Storage. –Why Cloud Computing Matters – Advantages of Cloud Computing – Disadvantages of Cloud Computing – Companies in the Cloud Today – Cloud Services

UNIT II:
Developing Cloud Services: Web-Based Application – Pros and Cons of Cloud Service Development – Types of Cloud Service Development – Software as a Service – Platform as a Service – Web Services – On-Demand Computing – Discovering Cloud Services Development Services and Tools – Amazon Ec2 – Google App Engine – IBM Clouds

UNIT III:
Cloud Computing Security Architecture: Cloud security fundamentals-Vulnerability assessment tool for cloud- Privacy and Security in cloud. Cloud computing security architecture: Architectural Considerations-General Issues-Trusted Cloud computing- Secure Execution Environments and Communications-Micro-architectures; Identity Management and Access control Identity management-Access control, Autonomic Security

UNIT IV:
Cloud Computing For Everyone: Centralizing Email Communications – Collaborating on Schedules – Collaborating on To-Do Lists – Collaborating Contact Lists – Cloud Computing for the Community – Collaborating on Group Projects and Events – Cloud Computing for the Corporation

UNIT V:
Cloud Computing Case Studies: Cloud computing case studies: Google App Engine – IBM Clouds –Windows live – Micro soft dynamic CRM- Salesforce.com CRM- App Exchange – Amazon S3 – Oracle OBIEE.

Course Outcomes:
Upon completion of this course, students should be able to:
1. Articulate the main concepts, key technologies, strengths, and limitations of cloud computing and the possible applications for state-of-the-art cloud computing
2. Identify the architecture and infrastructure of cloud computing, including SaaS, PaaS, IaaS, public cloud, private cloud, hybrid cloud, etc.
3. Explain the core issues of cloud computing such as security, privacy, and interoperability.
4. Choose the appropriate technologies, algorithms, and approaches for the related issues.
5. Identify problems, and explain, analyze, and evaluate various cloud computing solutions.
6. Provide the appropriate cloud computing solutions and recommendations according to the applications used.
7. Attempt to generate new ideas and innovations in cloud computing.
8. Collaboratively research and write a research paper, and present the research online. Knowledge of Governance of Cloud Computing.

TEXT BOOKS:
1. Cloud Computing: Implementation, Management and Security, John W. Rittinghouse, James F.Ransome, CRC Press, rp2012.
2. Cloud Computing a practical approach by Anthony T.Velte, Toby J Velte Robert Elsenpeter, TMH 2010

REFERENCE BOOKS:
1. Michael Miller, Cloud Computing: Web-Based Applications That Change the Way You Work and Collaborate Online, Que Publishing, August 2008.
2. Haley Beard, Cloud Computing Best Practices for Managing and Measuring Processes for On-demand Computing, Applications and Data   Centers in the Cloud with SLAs, Emereo Pty Limited.
3. Mastering Cloud computing by Raj Kumar Buyya.

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

IV Year B.Tech CSE-I SEM   L T/P/D C
                                                                                             3 1/ - / -   4

MOBILE APPLICATION DEVELOPMENT
(Elective-I)

Course Objectives:
1. Mobile Application Development course exposes the students to essentials of mobile apps development.
2. The core modules of this subject include designing, developing, testing, signing, packaging and distributing high quality mobile apps.
3. This course aims to teach mobile app development using Android as the development platform.

UNIT I:
Introduction to Mobile A brief history of Mobile, The Mobile Ecosystem, Why Mobile?, Types of Mobile Applications, Mobile Information Architecture, Mobile Design, Mobile 2.0, Mobile Web development, Small Computing Device Requirements.
J2ME: Overview The World of Java, Inside J2ME, J2ME Architecture, MIDlet Programming, J2ME Wireless Toolkit, Hello World J2ME Style, Multiple MIDlets in a MIDlet Suite

UNIT II:
Introduction to Android: History of Android, Introduction to Android, Operating Systems, Android Development Tools, Android Architecture.

UNIT III:
Development Tools: Installing and using Eclipse with ADT plug-in, Installing Virtual machine for Android sandwich/Jelly bean (Emulator), configuring the installed tools, creating a android project –Hello Word, run on emulator, Deploy it on USB-connected Android device

UNIT IV:
User Interface Architecture: Application context, intents, Activity life cycle, multiple screen sizes
User Interface Design: Form widgets, Text Fields, Layouts, Button control, toggle buttons, Spinners(Combo boxes),Images, Menu, Dialog.

UNIT V:
Database: Understanding of SQLite database, connecting with the database.

Course Outcomes:
Upon completion of this course, student shall be able to:
1. Appreciate the Mobility landscape
2. Familiarize with Mobile apps development aspects
3. Design and develop mobile apps, using Android as development platform, with key focus on user experience design, native data handling and background tasks and notifications.
4. Perform testing, signing, packaging and distribution of mobile apps.
5. The student can design and develop mobile application using J2ME

TEXTBOOKS:
1. J2ME: The Complete Reference, James Keogh, Tata McGrawHill
2. Android application development for java programmers. By James C. Sheusi. Publisher: Cengage Learning, 2013.
3. Lauren Darcey and Shane Conder, "Android Wireless Application Development", Pearson Education, 2nd ed. (2011)

REFERENCE BOOKS:
1. Reto Meier, "Professional Android 2 Application Development", Wiley India Pvt Ltd
2. Mark L Murphy, "Beginning Android", Wiley India Pvt Ltd
3. Sayed Y Hashimi and Satya Komatineni, "Pro Android", Wiley India Pvt Ltd. devloper.android.com (web)
4. Android Application Development All in one for Dummies by Barry Burd, Edition: I
5. Teach Yourself Android Application Development In 24 Hours, Edition:I, Publication: SAMS

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

IV Year B.Tech CSE-I SEM	**L**	**T/P/D** **C**
	3	**1/ - / - 4**

BIG DATA ANALYTICS
(Elective-I)

Course Objective:

1. Big data refers to a collection of large and complex data sets those are difficult to process using traditional data processing applications.
2. The challenges include capture, curation, storage, search, sharing, transfer, analysis and visualization.
3. This course introduces concepts and techniques to overcome these challenges and to infer laws from large data sets to reveal relationships, dependencies, and to perform predictions of outcomes and behaviors.

UNIT I: Introduction – small and big data, statistics and machine learning, statistical data mining; Providing structure to unstructured data – machine translation, auto coding, indexing, term extraction; Identification, de identification and re identification; ontologies and semantics; introspection;

UNIT II: Data integration and software interoperability; immutability and immortality; measurement; big data and healthcare. Big data techniques – data range, denominator, frequency distributions, mean and standard deviation, estimation-only analysis; big data analysis – clustering, classifying, recommending and modeling, data reduction, normalizing and adjusting data; special considerations – theory in search of data, data in search of a theory,

UNIT III: Over fitting, bigness bias, too much data, fixing data; stepwise approach to big data analysis – formulate a question, resource evaluation, reformulate a question, query output adequacy, data description and reduction, algorithm selection, results review; failure, legalities and societal issues.

UNIT IV: Variable assessment - correlation coefficient, scatterplots; paired-variable assessment – CHAID based data mining; symmetrizing ranked data – scales of measurement, steam and leaf display, Box and Whiskers plot; many-variable assessment – principle component analysis; logistic regression; ordinary regression; regression coefficient; predictive contribution coefficient

UNIT V: R language – data modeling in R, importing data into R, Hadoop – different Hadoop modes, Hadoop Distributed File System (HDFS) – fundamentals and architecture, MapReduce – fundamentals and architecture, Hadoop security, Hadoop programming in Java, Integrating R and Hadoop – RHIPE, RHadoop, data analytics with R and Hadoop, importing and exporting data from various databases, Hive, RBase, Apache Pig- large data analysis platform, automating data processing with Oozie.

Course Outcome:

Upon completion of this course, student shall be able to:
1. Understand the concepts of big data
2. The student able to know the machine learning techniques
3. The student can formulate the solutions on big data for queries
4. Apply data mining concepts on big data
5. The student to know the concepts like Hadoop security and data modeling on R

Text Books:
Jules J Berman, Principles of Big Data: Preparing, Sharing, and Analyzing Complex Information, Morgan Kaufman-Elsevier, 2013.
1. Bruce Ratner , Statistical and Machine-Learning Data Mining: Techniques for Better Predictive Modeling and Analysis of Big Data, 2nd Edition, CRC Press, 2011.

Reference Books:
1. Michael Milton, Head First Data Analysis: A learner's guide to big numbers, statistics, and good decisions, O'Reilly Media Inc., 2009.
2. Big Data Now: 2012 Edition, O'reilly Media Inc., 2012.
   Vignesh Prajapati , Big Data Analytics with R and Hadoop, Packt Publishing, 2013.

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

IV Year B.Tech CSE-I SEM   L   T/P/D   C
                                                               3   1/ - / -   4

MACHINE LEARNING
(Elective-I)

Course Objectives:
1. To be able to formulate machine learning problems corresponding to different applications.
2. To understand a range of machine learning algorithms along with their strengths and weaknesses.
3. To understand the basic theory underlying machine learning.
4. To be able to apply machine learning algorithms to solve problems of moderate complexity.
5. To be able to read current research papers and understands the issues raised by current research.

UNIT I:
INTRODUCTION - Well-posed learning problems, Designing a learning system, Perspectives and issues in machine learning. Concept learning and the general to specific ordering – Introduction, A concept learning task, Concept learning as search, Find-S: finding a maximally specific hypothesis, Version spaces and the candidate elimination algorithm, Remarks on version spaces and candidate elimination, Inductive bias.

UNIT II :
Decision Tree learning – Introduction, Decision tree representation, Appropriate problems for decision tree learning, The basic decision tree learning algorithm, Hypothesis space search in decision tree learning, Inductive bias in decision tree learning, Issues in decision tree learning.
Artificial Neural Networks – Introduction, Neural network representation, Appropriate problems for neural network learning, Perceptions, Multilayer networks and the back propagation algorithm, Remarks on the back propagation algorithm, An illustrative example face recognition Advanced topics in artificial neural networks Evaluation Hypotheses – Motivation, Estimation hypothesis accuracy, Basics of sampling theory, A general approach for deriving confidence intervals, Difference in error of two hypotheses, Comparing learning algorithms

UNIT III:
Bayesian learning – Introduction, Bayes theorem, Bayes theorem and concept learning, Maximum likelihood and least squared error hypotheses, Maximum likelihood hypotheses for predicting probabilities, Minimum description length principle, Bayes optimal classifier, Gibs algorithm, Naïve Bayes classifier, An example learning to classify text, Bayesian belief networks The EM algorithm.
Computational learning theory – Introduction, Probability learning an approximately correct hypothesis, Sample complexity for Finite Hypothesis Space, Sample Complexity for infinite Hypothesis Spaces, The mistake bound model of learning - Instance-Based Learning- Introduction, k -Nearest Neighbour Learning, Locally Weighted Regression, Radial Basis Functions, Case-Based Reasoning, Remarks on Lazy and Eager Learning.
Genetic Algorithms – Motivation, Genetic Algorithms, An illustrative Example, Hypothesis Space Search, Genetic Programming, Models of Evolution and Learning, Parallelizing Genetic Algorithms

UNIT IV:
Learning Sets of Rules – Introduction, Sequential Covering Algorithms, Learning Rule Sets: Summary, Learning First Order Rules, Learning Sets of First Order Rules: FOIL, Induction as Inverted Deduction, Inverting Resolution Analytical Learning - Introduction, Learning with Perfect Domain Theories: Prolog-EBG Remarks on Explanation-Based Learning, Explanation-Based Learning of Search Control Knowledge

UNIT V:
Combining Inductive and Analytical Learning – Motivation, Inductive-Analytical Approaches to Learning, Using Prior Knowledge to Initialize the Hypothesis, Using Prior Knowledge to Alter the Search Objective, Using Prior Knowledge to Augment Search Operators, Reinforcement Learning – Introduction, The Learning Task, Q Learning, Non-Deterministic, Rewards and Actions, Temporal Difference Learning, Generalizing from Examples, Relationship to Dynamic Programming

TEXT BOOKS:

1. Machine Learning – Tom M. Mitchell, - MGH
2. Machine Learning: An Algorithmic Perspective, Stephen Marsland, Taylor & Francis (CRC)

REFERENCE BOOKS:

1. Machine Learning Methods in the Environmental Sciences, Neural Networks, William WHsieh, Cambridge Univ Press.
2. Richard o. Duda, Peter E. Hart and David G. Stork, pattern classification, John Wiley &Sons Inc., 2001
3. Chris Bishop, Neural Networks for Pattern Recognition, Oxford University Press, 1995

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

IV Year B.Tech CSE-I SEM   L   T/P/D C
                                                                                                         3   1/ - / -   4

CYBER SECURITY
(Elective-I)

Course Objectives:
1. This course provides an overview of Information Security and Assurance over the Internet.
2. Students will be exposed to the spectrum of security activities, methods, methodologies, and procedures with emphasis on practical aspects of Information Security
3. In this course Service Processes, storage and security management, Cyber Forensics and standard, laws and Acts for Information Security will be learnt

UNIT I:
Introduction: Introduction and Overview of Cyber Crime, Nature and Scope of Cyber Crime, Types of Cyber Crime: Social Engineering, Categories of Cyber Crime, Property Cyber Crime. CYBER CRIME ISSUES: Unauthorized Access to Computers, Computer Intrusions, White collar Crimes, Viruses and Malicious Code, Internet Hacking and Cracking, Virus Attacks, Pornography, Software Piracy, Intellectual Property, Mail Bombs, Exploitation ,Stalking and Obscenity in Internet, Digital laws and legislation, Law Enforcement Roles and Responses. Security Policy Design, Designing Security Procedures, Risk Assessment Techniques, Security standards, Biba Model, Chinese wall, Bell La Pedula Model.

UNIT II:
Service Delivery Process: Service Delivery Process, Service Level Management, Financial Management, Service Management, Capacity Management, Availability Management.
SERVICE SUPPORT PROCESS- Service Support Process, Configuration Management, Incident Management, Problem Management, Change Management, Release Management.

UNIT III:
Storage Management: Backup & Storage, Archive & Retrieve, Disaster Recovery, Space Management, Database & Application Protection, Bare Machine Recovery, Data Retention
Security Management: Security, Computer and internet Security, Physical Security,Identity Management, Access Management. Intrusion Detection, Security Information Management.

UNIT IV:
Cyber Forensics: Introduction to Digital Forensics, Forensic Software and Hardware, Analysis and Advanced Tools, Forensic Technology and Practices, Forensic Ballistics and Photography, Face, Iris and Fingerprint Recognition, Audio Video Analysis, Windows System Forensics, Linux System Forensics, Network Forensics Evaluation of crime scene and evidence collection ,Usage of tools for disk imaging and recovery processes.

UNIT V:
Introduction to Information Security Standards, Laws and Acts: Laws and Ethics, Digital Evidence Controls, Evidence Handling Procedures, Basics of Indian Evidence ACT IPC and CrPC , Electronic Communication Privacy ACT, Legal Policies, ISO 27001,PCI DSS,IT Act, Copy Right Act.

Course Outcomes:
 Upon completion of this course, students should be able to:
1. Understand security principles, threats and attack techniques
2. Describe authentication and access control
3. Describe reference monitors, and security models
4. Understand Service Delivery and support process and Understand network security and operating system security
5. Understand storage and security management and Understand Cyber forensics and use tools for imaging and recovery
6. Understand various information security, laws and standards

Textbooks:
1. .Nelson Phillips and Enfinger Steuart, "Computer Forensics and Investigations", Cengage Learning, New Delhi, 2009.
2. "Management of Information Security", M. E. Whitman, H. J. Mattord, Nelson   Education / CENGAGE Learning, 2011, 3rd Edition.
3. "Guide to Computer Forensics and Investigations", B. Nelson, A. Phillips, F. Enfinger, C. Steuart, Nelson Education / CENGAGE Learning, 2010, 4th Edition.
4. Goel Ritendra, Computer Application in Management, New Age International Publishers, New Delhi.
5. Chowdhury G.G., Text Retrieval Systems in information Management, New   Age International Publishers, New Delhi

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

IV Year B.Tech CSE-I SEM   L   T/P/D C
                                                                                                      3   1/ - / - 4

ADVANCED COMPUTER ARCHITECTURE
(Elective-II)

Course Objectives:
1. This course helps to explore on the advanced concepts and state-of-the-art developments in computer architecture: memory systems, pipelining, simultaneous multithreading, run-time optimization, array processing, parallel processing, multiprocessing, abstract analytic models, power-aware computing, embedded computing, relationship between computer design and application requirements, cost/performance tradeoffs, and many example computers of interesting and unusual features.
2. This course presents the principles, characteristics, and trends of computer systems design at a level appropriate for all computer scientists and computer engineers.
3. It expands on the role of a traditional computer architecture course, focusing largely on the hardware design, to include aspects of the complete system, comprising the hardware, operating system, compilers, and application software.
4. The aim of this module is to emphasize on the concept of a complete system consisting of asynchronous interactions between concurrently executing hardware components and device driver software in order to illustrate the behavior of a computer system as a whole.
5. Students will also gain an understanding of the hardware technology that has fueled the rapid progress of computer systems. Since the technology will continue to change and improve, it is important to see how these changes will affect the characteristics of future computer systems.

UNIT I:
Fundamentals of Computer design- Technology trends- cost price and their trends- measuring and reporting performance - quantitative principles of computer design

UNIT II:
Instruction set principles and examples- Classifying instruction set architecture - memory addressing- type and size of operands- operations in the instruction set- instructions for control flow- encoding an instruction set.

UNIT III:
Instruction level parallelism (ILP)and its dynamic exploitation – Concepts and challenges-overcoming data hazards- reducing branch costs with dynamic hardware prediction – high performance instruction delivery-hardware based speculation ILP software approach- compiler techniques- static branch protection - VLIW approach - H.W support for more ILP at compile time.

UNIT IV:
Memory hierarchy design-   Cache performance- reducing cache misses penalty and miss rate – virtual memory. Multiprocessors and thread level parallelism- symmetric shared memory architectures- distributed shared memory- Synchronization- multi threading

UNIT V:
Storage systems - Types – Buses - RAID- errors and failures - designing an I/O system in five easypieces. Inter connection networks and clusters - interconnection network media – practical issues in interconnecting networks – clusters- designing a cluster

Course Outcomes:
Upon completion of the course, the students are expected to:
1. Understand and apply concept and principle of cache memory and virtual memory to high - performance computer architecture.
2. Understand pipelining and its speed advantage & design pipelined logic.
3. Proficient in fault-tolerant design techniques and examine various methods of error detection and correction such as TMR and Hamming Codes.
4. Identify tradeoffs between complex instruction set computers (CISC) and reduced instruction set computers (RISC).
5. Analyze and perform tradeoffs between the cost, performance, and reliability of alternative computer architectures.

TEXT BOOKS:
1. Computer Architecture A quantitative approach 3rd edition John L. Hennessy & David A. Patterson Morgan Kaufmann (An Imprint of Elsevier)

REFERENCE BOOKS:
1. "Computer Architecture and parallel Processing" Kai Hwang and A.Briggs International Edition McGraw-Hill.
2. Advanced Computer Architectures, DezsoSima, Terence Fountain, Peter Kacsuk, Pearson.

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

IV Year B.Tech CSE-I SEM   L   T/P/D   C
                                                                                                           3   1/ - / -   4

BUILDING ENTERPRISE APPLICATIONS
(Elective-II)

Course Objectives:
1. Expose the data model in a web application with a rich ADF Faces user interface
2. Define the Enterprise Architect's roles, responsibilities and deliverables.
3. Identify non-functional requirements (NFRs) and describe common problems and solutions.
4. Translate business requirements into an architecture.
5. How to weigh choices in architecting the client, web, business, integration and data tiers.
6. Apply various evaluation criteria to choosing architectural elements and patterns, tools, servers and frameworks. .

UNIT I:
Introduction: Challenges of Enterprise Application Development, The Platform for Enterprise Solutions, J2EE Application Scenarios: Multitier Application Scenario, Stand-Alone Client Scenario, Web-Centric Application Scenario, Business-to-Business Scenario, MVC Architecture
J2EE Platform Technologies: Component Technologies, Platform Roles and Services, Service Technologies, Communication technologies.

UNIT II:
Client Tier: Requirements and constraints- Operating Environment, Deployment, Web clients-protocols, Content format, types of web clients, EJB Clients, Enterprise Information system clients
Web Tier: Web Applications and Web Containers, Dynamic content creation, Internationalization and Localization, Application Designs, Application Migration

UNIT III:
Enterprise Java beans Tier: Business Logic, Enterprise Beans as J2EE Business Objects, Session Beans, and Design Guidelines
Enterprise Information System Tier: Enterprise Information System Capabilities and Limitations.
Enterprise Information System Integration Scenarios, Relational Database Management System Access, Application Component Provider Tasks, Application Programming Model.

UNIT IV:
Transaction Management : Properties of Transactions, J2EE Platform Transactions, Scenarios,JTA Transactions ,Transactions in Applets and Application Clients ,Transactions in Web Components ,Transactions in Enterprise Information systems

UNIT V:
Security : Security Threats and Mechanisms, Authentication-Protection ,Authentication Mechanisms , Authentication Call Patterns , Auto-Registration, Exposing Authentication Boundaries with REFERENCE BOOKS , Authorization ,Protecting Messages-Integrity Mechanisms, Confidentiality Mechanisms , Identifying Sensitive Components ,Ensuring Confidentiality of Web Resources

Course Outcomes:
Upon completion of this course, student should be able to get Knowledge and Understanding about
1. Student knows different strategies and technologies for developing cross platform, distributed, object-oriented applications in Java
2. Student should discuss issues involved in building robust e-business systems in Java
3. Student knows about the Enterprise Java applications developed using the architecture as a guideline can accommodate rapid change and growth. By taking this course, you'll understand the technical context of the Java EE and relevant technologies.
4. Student knows about various security threats and mechanisms

TEXT BOOKS:
1. Designing Enterprise Applications with the JavaTM 2 Platform, Enterprise Edition , Nicholas Kassem and the Enterprise Team Version.

REFERENCE BOOKS:
1. Enterprise Integration Patterns: Designing, Building, and Deploying Messaging Solutions (Addison Wesley Signature Series) by Gregor Hohpe , Bobby Woolf
2. Accelerated GWT: Building Enterprise Google Web Toolkit Applications (Expert's Voice in Web Development) by Vipul Gupta
3. Aising Enterprise Applications: A Software Engineering Perspective, Wiley Edition by Anubhav Pradhan, Satheesha B. Nanjappa, Senthil K. Nallasamy, Veerakumar Esakimuthu

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

IV Year B.Tech CSE-I SEM   L   T/P/D   C
                                                                     3   1/ - / - 4

ADVANCED DATA BASES
(Elective-II)

Course Objectives:
1. Introducing Distributed Database Management System and its Design issues
2. Exploring different types algorithms for processing queries.
3. Describe the methods to translate complex conceptual data models into logical and Physical database designs
4. Demonstrating query optimization and its algorithms
5. Enumerating the concepts behind distributed transaction processing

UNIT I:
Introduction of DBMS,Distributed Data Processing, Distributed Database System, Promises of DDBSs, Problem areas.
Overview of Relational DBMS: Relational Database Concepts, Normalization, Integrity rules, Relational data languages.

UNITII:
Distributed DBMS Architecture: Architectural Models for Distributed DBMS, DDBMS Architecture. Distributed Database Design: Alternative Design Strategies, Distributed Database, Design issues, Fragmentation, Allocation.

UNIT III:
Query Processing and decomposition: Query Processingo bjectives, Characterization of query processors, layers of query processing, query decomposition, Localization of distributed data.

UNIT IV:
Distributed query Optimization: Query optimization, centralized query optimization, Distributed query optimization algorithms.

UNIT V:
Transaction Management: Definition, properties of transaction, types of transactions.Distributed concurrency control: Serializability, concurrency control Mechanisms & Algorithms,Time stamped & Optimistic concurrency control Algorithms, Deadlock Management.

Course Outcomes:
Upon successful completion of this course, students should be able to:
1. Understand the role of a distributed database management system in an Enterprise/organization.
2. Design queries of a distributed database management system
3. Apply the principles of query optimization techniques to a database schema.
4. Understand the concept of a database transaction including concurrency control, backup and recovery, and data object locking and protocols.
5. Explain the various types of locking mechanisms used in within database management systems.
6. Explain the different types of database failures and the methods used to recover from different failures

TEXT BOOKS:
1. M.Tamer OZSU and Patuck Valduriez: Principles of Distributed Database Systems, Pearson Edn. Asia, 2001.
2. Stefano Ceri and Willipse Pelagatti: Distributed Databases, McGraw Hill.

REFERENCE BOOKS:
1. Henry F Korth, A Silberchatz and Sudershan : Database System Concepts, MGH
2. Raghuramakrishnan and Johhanes Gehrke: Database Management Systems,MGH

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

IV Year B.Tech CSE-I SEM   **L   T/P/D   C**
3   1/ - / -   4

MULTIMEDIA AND RICH INTERNET APPLICATIONS
(Elective-II)

Course Objectives:
1. The student can understand the basic concepts like Fundamental Text, image etc.
2. The student able to know the Multimedia and video compression techniques.
3. The student can understand the web2.0 and tools of Multimedia adobe flash etc and applications of internet and multimedia.
4. The student to know the concepts-flash, flex and ajax

UNIT I:
Fundamental concepts in Text and Image: Multimedia and hypermedia, world wide web, overview of multimedia software tools. Graphics and image data representation graphics /image data types, file formats, Color in image and video: color science, color models in images, color models in video.
 Fundamental concepts in video and digital audio: Types of video signals, analog video, digitization of sound, MIDI, quantization and transmission of audio.

UNIT II:
Multimedia Data compression: Lossless compression algorithm, Lossy compression algorithms, Image compression standards. Basic video compression techniques, Case study: MPEG Video coding I, Basic Audio Compression techniques, Case study: MPEG Audio compression.

UNIT III:
Web 2.0, What is web 2.0, search , content Networks, User Generated Content, Blogging, Social Networking, Social Media, Tagging, Social Marking, Rich Internet Applications, Web services, Mashups, Location Based Services, XML, RSS, Atom, JSON, and VoIP, Web 2.0 Monetization and Business Models, Future of the web.

UNIT IV:
Rich Internet Applications(RIAs) with Adobe Flash: Adobe Flash – Introduction, Flash Movie Development, Learning Flash with Hands-on Examples, Publish your flash movie, Creating special effects with Flash, Creating a website splash screen, action script, web sources.
Rich Internet Applications(RIAs) with Flex 3 – Introduction, Developing with Flex 3, Working with components, Advanced Component Development, Visual Effects and Multimedia.

UNIT V:
Ajax- Enabled Rich Internet Application: Introduction, Traditional web Applications vs Ajax Applications, Rich Internet Application with Ajax, History of Ajax,Raw Ajax example using xmlhttprequest object , Using XML , Creating a full scale Ajax Enabled application, dojo ToolKit.

Course Outcomes:
1. After completion of the course the understand the concepts Text and image, Multimedia on the web is sound, music, videos, and animations.
2. The student can use modern web browsers have support for many multimedia applications.
3. After completion of the course the student can use multimedia tools like flex, adobe flash etc.
4. After completion of course the student can design and develop internet applications using multimedia.

TEXTBOOKS:
1. Fundamentals of Multimedia by Ze-Nian Li and Mark S. Drew PHI Learning,2004.
2. Professional Adobe Flex 3, Joseph Balderson, Peter Ent, et al, Wrox Publication, Wiley India, 2009.
3. AJAX, Rich Internet Application, and web development for Programmer, Paul J Deitel and Harvey M Deitel, Deitel Developer Series, Pearson Education.

REFERENCE BOOKS:
1. Multimedia Communication: Applications, Networks, Protocols and Standards, Fred halsall, Pearson Education, 2001, rp 2005.
2. Multimedia Making it work, Tay Vaughan, 7th edition, TMH,2008.
3. Introduction to multimedia communications and Applications, Middleware, Networks, K.R.Rao,Zoran,Dragored, Wiley India,2006.
4. Multimedia Computing, Communication & Applications, Ralf Steinmetz and Klara Nahrstedt, Pearson Education, 2004.
5. Principles of Multimedia, Ranjan Parekah,TMH, 2006.
6. Multimedia in Action, James E.Shuman, Cengage Learning, 198,rp 2008.

7. Multimedia System design, Prabhat K.Andleigh, Kiran Thakrar, PHI, 1986.
8. Multimedia Communications Technology, Steve Heath, Elsvier 1999,rp 2003.
9. Adobe Flash CS3 Professional, Adobe press, Pearson Education, 2007.
10. Flash CS3 Professional Advanced , Russel Chun, Pearson Education,2007.
11. Flash CS5, Chris Grover, O' Reilly, SPD,2010.
12. SAMS Teach yourself Adobe flash CS3, Pearson Education,2007.
13. Flex 4 Cookbook, Joshua Noble,et. al,O'Reilly, SPD 2010.
14. Flex 3 – A beginner's guide, Michele E.Davis, Jon A. Philips, TMH, 2008.
    Mastering Dojo, R.Gill,C.Reicke and A.Russell,SPD.

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

IV Year B.Tech CSE-I SEM   L   T/P/D C
                                                                 -   - /3 / -   2

LINUX PROGRAMMING AND OOAD LAB

Course Objectives:
1. Understand basic principles of Linux programming
2. To familiarize students with the Linux environment
3. To learn the fundamentals of shell scripting/programming
4. To familiarize students with basic Linux administration
5. The students will be able to understand the need of models in the software development process and the basic review of object-oriented concepts will be given.
6. The student will be able to understand the Unified Modeling Language
7. Principles and Learns fundamental process pattern for object-oriented analysis and design.
8. Learn how to derive analysis model from use case requirements

LINUX PROGRAMMING :

List of Experiments:
1. Basic Linux Commands   File handling utilities, Security by file permissions, Process   utilities, Disk utilities, sed, awk, grep.
2. Write a shell script that accepts a file name, starting and ending line numbers as arguments and displays all the lines   between the given line numbers.
3. Write a shell script that deletes all lines containing a specified word in one or more files supplied as arguments to it.
4. Write a shell script that displays a list of all the files in the current directory to which the user has read, write and execute permissions.
5. C programming examples using Linux Operating systems.
6. Write a shell script that receives any number of file names as arguments checks if every argument supplied is a file or a directory and reports accordingly. Whenever the argument is a file, the number of lines on it is also reported.
7. Write a shell script that accepts a list of file names as its arguments, counts and reports the occurrence of each word that is present in the first argument file on other argument files.
8. Write a shell script to list all of the directory files in a directory.
9. Write a shell script to find factorial of a given integer.
10. Write an awk script to count the number of lines in a file that do not contain vowels.
11. Write an awk script to find the number of characters, words and lines in a file.
12. Implement in C the following Unix commands using System calls
    a. a) cat   b) mv
13. Write a C program to emulate the Unix ls – l   command.
14. Write a C program on zombie process
15. Write a C program that illustrates the following.
    a) Creating a message queue.
    b) Writing to a message queue.
    c) Reading from a message queue.
16. Write a C program that illustrates file locking using semaphores.

OBJECT ORIENTED ANALYSIS AND DESIGN LAB

The student should take up the case studies of ATM system, Online Reservation System and Model it in different views i.e. Use case view, logical view, component view, Deployment view.
Week 1
Design a Use case Diagram for ATM system, Online Reservation System
Design a Sequence Diagram for ATM system, Online Reservation System. Design a Collaboration Diagram for ATM system, Online Reservation System.

Week 2
Design a Activity Diagram for ATM system, Online Reservation System.
Design a State Chart Diagram for ATM system, Online Reservation System.

Week 3
Design a Class Diagram for ATM system, Online Reservation System.

Week 4

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

Course Outcomes:

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

1. Understand the how to work with Linux commands
2. Understand the how to write Shell Scripts
3. Learn various System Calls in Linux
4. Become familiar with Write shell scripts to automate various tasks
5. Analyze the requirements through Use-Case View

6. Identify all structural and behavioral concepts of the entire system

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

TEXT BOOKS:

1. Unix System Programming using C++, T.Chan, PHI.
2. Unix Concepts and Applications, 4th Edition, Sumitabha Das, TMH,2006.
3. Beginning Linux Programming, 4th Edition, N.Matthew, R.Stones,Wrox, Wiley India Edition,rp-2008
4. Principles of compiler design -A.V. Aho .J.D.Ullman; Pearson Education.
5. Modern Compiler Implementation in C- Andrew N. Appel, Cambridge University Press.

REFERENCE BOOKS:

1. Linux System Programming, Robert Love, O'Reilly, SPD.
2. Advanced Programming in the Unix environment, 2nd Edition, W.R.Stevens, Pearson Education.
3. Unix Network Programming ,W.R.Stevens,PHI.
4. Unix for programmers and users, 3rd Edition, Graham Glass, King Ables, Pearson Education.
5.lex&yacc – John R. Levine, Tony Mason, Doug Brown, O'reilly
6. Grady Booch, James Rumbaugh, Ivar Jacobson: The Unified Modeling Language User Guide, Pearson Education.

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

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

APPLICATION PROGRAMMING LAB

Course Objectives:
1. Gain an understanding of the Microsoft .NET architecture.
2. Gain a working knowledge of the C Sharp programming language and Learn how to build object-oriented applications using C Sharp.
3. Gain a comprehensive understanding of the philosophy and architecture of C-Sharp programming

WEEK 1
Learning to use Visual Studio 2010 IDE
Building Console Application Project

WEEK 2
Write a Program to generate the factorial of a given number by using command line argument
Write a Program to generate febnocci series
Write a program to generate the temperature conversion

WEEK 3
Write a program to generate pascal triangle .
Write a program which asks for a symbol and a width, and displays a triangle of that width, using that number for the inner symbol

WEEK 4
Write a program to find the second highest value in an array
Write a program that at accept an array and a number to be searched in an array if found display proper message and its position in a array

WEEK 5
Write a console program to develop tic-tac toe game
Create a function named "ChangeChar" to modify a letter in a certain position (0 based) of a string, replacing it with a different letter ex: ChangeChar("crush",2,'a')

WEEK 6
1. Create a base class, Telephone, and derive a class ElectronicPhone from it. In Telephone, create a protected string member phonetype, and a public method Ring( ) that outputs a text message like this: "Ringing the <phonetype>." In ElectronicPhone, the constructor should set the phonetype to "Digital." In the Run( ) method, call Ring( ) on the ElectronicPhone to test the inheritance.
2. Extend above Exercise to illustrate a polymorphic method. Have the derived class override the Ring( ) method to display a different message
3. Change the Telephone class to abstract, and make Ring( ) an abstract method. Derive two new classes from Telephone: DigitalPhone and TalkingPhone. Each derived class should set the phonetype, and override the Ring( ) method.

WEEK 7
1. Write a program to create a room class, the attributes of this class is roomno, roomtype, roomarea and ACmachine. In this class the member functions are setdata and displaydata
2. Write a program to create a class named shape. In this class we have three sub classes circle, triangle and square each class has two member function named draw () and erase (). Create these using polymorphism concepts

WEEK 8
1. Write a program to create interface named test. In this interface the member function is square. Implement this interface in arithmetic class.Create one new class called ToTestInt in this class use the object of arithmetic class.
2. Create an outer class with a function display, again create another class inside the outer class named inner with a function called display and call the two functions in the main class.

WEEK 9
1. Write a program for example of try and catch block. In this check whether the given array size is negative or not.
2. Write a program to illustrate usage of try multiple catch with finally clause

3. Write a program for creation of user defined exception to show whether candidate is eligible to caste vote .

WEEK 10
1. Create a console application that displays current date a time for 10 times with the time interval of 2 seconds(use sleep() method
2. Write a program that demonstrates a high-priority thread using Sleep to give lower-priority threads a chance to run.

WEEK 11
1. create a console application to implement delegate.Create a delegate called strMyDel that takes one string parameter and returns a string.create a class named TestDelegate that contains two non-static methods space() and reverse() having following signature:String Space(String str); space between input characters String Reverse(String str); - reverse the given string
2. Create a console application to get two integer numbers from user and perform addition and multiplication on the input numbers.use the concept of MultiCastEvent

WEEK 12
1. Create a console application to deploy on global assemble cache(using gacutil)
2. Create a bank namespace with various classes (Saving , Current) and implement the namespace in another application

WEEK 13
1. Create a program to display the data about all books
2. Create a program to display the details about a given book.

WEEK 14
Create a program to ask the user for data about books (title, author, gender and summary) and store them in a SQLSERVER database
Write a program to update books details using sql procedures

Course Outcomes:
Upon completion of the course, the students are expected to:
1. At the end of the semester, student attain a detailed working knowledge of C-Sharp implicit types, object initializes, delegates, anonymous types & methods, extension methods, lambda expression, data access using ado.net and LINQ .
2. The student able to design and develop business applications using .Net frame work

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

IV Year B.Tech CSE-II SEM   L   T/P/D C
                                                                                        3   1/- / -   4

SOFTWARE PROJECT MANAGEMENT

Course Objectives:
1. A basic knowledge of software project management principles
2. The ability to come up with a project schedule and assign resources
3. Choose an appropriate project development methodology (e.g. waterfall, spiral ...)
4. Identify project risks, monitor and track project deadlines
5. The capability to work in a team environment and be aware of different modes of communications

UNIT I:
Conventional Software Management: The waterfall model, conventional software Management performance. Overview of Project Planning – Stepwise Project Planning. **Improving Software Economics:** Reducing Software product size, improving software processes, improving team effectiveness, improving automation, Achieving required quality, peer inspections.

UNIT II:
The old way and the new way: The principles of conventional software Engineering, principles of modern software management, transitioning to an iterative process.
Life cycle phases: Engineering and production stages, Inception, Elaboration, Construction, Transition phases.
Artifacts of the process: The artifact sets, Management artifacts, Engineering artifacts, programmatic artifacts.

UNIT III:
Work Flows of the process: Software process workflows, Iteration workflows. **Checkpoints of the process:** Major mile stones, Minor Milestones, Periodic status assessments.
Iterative Process Planning: Work breakdown structures, planning guidelines, cost and schedule estimating, Iteration planning process, Pragmatic planning.

UNIT IV:
Process Automation: Automation Building blocks.
Project Control and Process instrumentation: The seven core Metrics, Management indicators, quality indicators, life cycle expectations, pragmatic Software Metrics, Metrics automation.
Tailoring the Process: Process discriminants.

UNIT V:
Project Organizations and Responsibilities: Line-of-Business Organizations, Understanding Behavior – Organizational Behavior **Future Software Project Management:** Modern Project Profiles, Next generation Software economics, modern process transitions.
Case Study: The command Center Processing and Display system- Replacement (CCPDS-R)

Course Outcomes:
Upon completion of the course, the students are expected to:
1. Identify and describe how different project contexts will impact upon all aspects of a software development project
2. identify and describe the key phases of project management and the key skills associated with each
3. determine an appropriate project management approach through an evaluation of the business context and project scope and knowledge of agile and traditional project management approaches
4. demonstrate through application, knowledge of the key project management skills, such as product and work break-down structure, schedule; governance including progress reporting, risk and quality management as part of a small team research and produce a concise piece of writing suitable for presentation to senior management

TEXT BOOKS:
1. Software Project Management, Walker Royce: Pearson Education, 2005

REFERENCE BOOKS:
1. Software Project Management, Bob Hughes and Mike Cotterell: Tata McGraw-Hill Edition.
2. Software Project Management, Joel Henry, Pearson Education.
3. Software Project Management in practice, Panka

MALLAREDDY ENGINEERING COLLEGE

(Autonomous)

IV Year B.Tech CSE-II SEM   **L   T/P/D C**

                                                                       3   1/- / -   4

SEMANTIC WEB AND SOCIAL NETWORKS

UNIT I :
Web Intelligence: Thinking and Intelligent Web Applications, The Information Age ,The World Wide Web, Limitations of today's Web, The Next Generation Web, Machine Intelligence, Artifical Intelligence, Ontology, Inference Engines, Software Agents, Berners-Lee www, Semantic Road Map, Logic on the semantic Web.

UNIT II:
Knowledge Representation for the Semantic Web: Ontologies and their role in the semantic web, Ontologies Languages for the Semantic Web -Resource Description Framework(RDF) / RDF Schema, Ontology Web Language(OWL),UML,XML/XML Schema.

UNIT III:
 Ontology Engineering: Ontology Engineering, constructing Ontology, Ontology Development Tools, Ontology Methods, Ontology Sharing and Merging, Ontology Libraries and Ontology mapping, Logic, Rule and Inference Engines.

UNIT IV:
 Semantic Web Applications, Services and Technology: Semantic Web applications and services, Semantic Search, e-learning, Semantic Bioinformatics, Knowledge Base .XML Based Web Services, Creating an OWL-S Ontology for Web Services, Semantic Search Technology, Web Search Agents and Semantic Methods,

UNIT V:
Social Network Analysis and semantic web: What is social Networks analysis, development of the social networks analysis, Electronic Sources for Network Analysis - Electronic Discussion networks, Blogs and Online Communities, Web Based Networks, Building Semantic Web Applications with social network features.

TEXT BOOKS:
 1. Thinking on the Web - Berners Lee, Gödel and Turing, Wiley interscience, 2008.
2. Social Networks and the Semantic Web, Peter Mika, Springer, 2007.

REFERENCE BOOKS:
1. Semantic Web Technologies, Trends and Research in Ontology Based Systems, J.Davies, R.Studer, P.Warren, Johri. Wiley & Sons.
2. Semantic Web and Semantic Web Services -Liyang Lu Chapman and Hall/CRC Publishers,(Taylor & Francis Group)
3. Information sharing on the semantic Web - Heiner Stuckenschmidt; Frank Van Harmelen, Springer Publications.
4. Programming the Semantic Web, T.Segaran, C.Evans, J.Taylor, O'Reilly, SPD.

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

IV Year B.Tech CSE-II SEM   L   T/P/D   C
                                                                               3   1/ -/ -   4

INFORMATION RETRIEVAL SYSTEMS
(Elective-III)

Course Objectives
1. Study fundamentals of DBMS, Data warehouse and Digital libraries
2. Learn various preprocessing techniques and indexing approaches in text mining
3. Know various clustering approaches and study different similarity measures
4. Study various search techniques in information retrieval systems
5. Know different cognitive approaches used in text retrieval systems and evaluation approaches
6. Study retrieval in multimedia systems and know various evaluation measures
7. Know about query languages and online IRsystem

UNIT I:
Introduction: Definition, Objectives, Functional Overview, Relationship to DBMS, Digital libraries and Data Warehouses. Information Retrieval System Capabilities, Search, Browse, Miscellaneous.

UNIT II:
Cataloging and Indexing: Objectives, Indexing Process, Automatic Indexing, Information Extraction. Data Structures: Introduction, Stemming Algorithms, Inverted file structures, N-gram data structure, PAT data structure, Signature file structure, Hypertext data structure. Automatic Indexing: Classes of automatic indexing, Statistical indexing, Natural language, Concept indexing, Hypertext linkages.

UNIT III:
Document and Term Clustering: Introduction, Thesaurus generation, Item clustering, Hierarchy of clusters. User Search Techniques: Search statements and binding, Similarity measures and ranking, Relevance feedback, Selective dissemination of information search, weighted searches of Boolean systems, Searching the Internet and hypertext.

UNIT IV:
Information Visualization: Introduction, Cognition and perception, Information visualization technologies. Text Search Algorithms: Introduction, Software text search algorithms, Hardware text search systems. Information System Evaluation: Introduction, Measures used in system evaluation, Measurement example – TREC results.

UNIT V:
Multimedia Information Retrieval, Models and Languages, Data Modeling, Query Languages, Indexing and Searching.Libraries and Bibliographical systems, online IR system, OPACs, Digital Libraries.

Course Outcomes:
Upon completion of the course, the students are expected to:
1. Recognize the Boolean Model, Vector Space Model, and Probabilistic Model.
2. Understand retrieval utilities.
3. Understand different formatting tags
4. Understand cross-language information retrieval
5. Understand the clustering techniques
6. Determine the efficiency.

TEXTBOOKS:
1. Information Storage and Retrieval systems Theory and Implementation Second Edition
2. Modern Information Retrival By Ricardo Baeza-Yates, Pearson Education, 2007.

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

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

IV Year B.Tech CSE-II SEM   **L   T/P/D   C**

3   1/ - /-   4

HUMAN COMPUTER INTERACTION
(Elective-III)

Course Objectives:
1. To facilitate communication between students of psychology, design, and computer science on user interface development projects.
2. To provide the future user interface designer with concepts and strategies for making design decisions.
3. To expose the future user interface designer to tools, techniques, and ideas for interface design.
4. To introduce the student to the literature of human-computer interaction.
5. To stress the importance of good user interface design.

UNIT I:
Introduction: Importance of user Interface – definition, importance of good design. Benefits of good design. A brief history of Screen design.

UNIT II:
The graphical user interface – popularity of graphics, the concept of direct manipulation, graphical system, Characteristics, Web user – Interface popularity, characteristics- Principles of user interface.

UNIT III:
Design process – Human interaction with computers, importance of human characteristics human consideration, Human interaction speeds, and understanding business junctions.

UNIT IV:
Screen Designing - Design goals – Screen planning and purpose, organizing screen elements, ordering of screen data and content – screen navigation and flow – Visually pleasing composition – amount of information – focus and emphasis – presentation information simply and meaningfully – information retrieval on web – statistical graphics – Technological consideration in interface Design.
Windows – New and Navigation schemes selection of window, selection of devices based and screen based controls.

UNIT V:
Components – text and messages, Icons and increases – Multimedia, colors, uses problems, choosing colors.
Software tools – Specification methods, interface – Building Tools.
Interaction Devices – Keyboard and function keys – pointing devices – speech recognition digitization and generation – image and video displays – drivers.

Course Outcomes:
After completing this course students must be able to demonstrate the knowledge and ability on
1. To understand the GUI & UI.
2. How to make a good design and information about design process.
3. components involved in designing a process or GUI

TEXT BOOKS:
1. The essential guide to user interface design, Wilbert O Galitz, Wiley DreamTech.
2. Designing the user interface. 3rd Edition Ben Shneidermann , Pearson Education Asia.

REFERENCE BOOKS:
1. Human – Computer Interaction. Alan Dix, Janet Fincay, Gre Goryd, Abowd, Russell Bealg, Pearson Education
2. Interaction Design Prece, Rogers, Sharps. Wiley Dreamtech,
3. User Interface Design, Soren Lauesen, Pearson Education. Mode of Evaluation

MALLA REDDY ENGINEERING COLLEGE
(Autonomous)

IV Year B.Tech CSE-II Sem   **L T/P/D C**
3 1/- / - 4

ARTIFICIAL INTELLIGENCE
(ELECTIVE- II)

Course Objectives:

This course contributes to the development of the following capabilities:

1. Enabling Knowledge: Ability to apply artificial intelligence techniques, including search heuristics, knowledge representation, planning and reasoning.
2. Problem Solving: Ability to design and implement appropriate solutions for search problems (such as playing two-person games) and for planning problems (such as determining a sequence of actions for a robot).
3. Critical Analysis: Ability to analyse problem specifications and derive appropriate solution techniques for them.

UNIT - I

Introduction to Artificial Intelligence, Artificial Intelligence Problems, Artificial Intelligence Techniques, problems, Problem space and search-defining the problem as a state space search, Production System, Problem characteristics

Heuristic Search Technologies Generate & Test Hill Climbing, Best First search, Problem reduction, Constraint satisfaction, Means End Analysis

UNIT -II

Knowledge Representation ,Knowledge using predicate logic-representing simple facts in logic, representing instance and is relationships, computable functions and predicates resolution. Representing Knowledge Using Rules: Procedural Vs Declarative knowledge, Logic Programming, Forward Vs Backward Reasoning, Matching, Control Knowledge.

UNIT -III

Symbolic Reasoning under uncertainty

Introduction to Non-monotonic Reasoning, logics for Non-monotonic Reasoning, Implementation: depth first search-Dependency – Directed Backtracking. Justification-based truth maintenance, logic based truth maintenance systems Statistical Reasoning-probability and Bayes theorem, certainty factors and rule-base systems Bayesian networks, dempster-shaffer theory. Weak Slot and Filler Structures, Semantic nets, Frames.

UNIT - IV

Strong slot and filler structures, Conceptual dependencies, Scripts. Game Planning Overview – an example domain-Block world, Components of a Planning System, Goal State Planning, Non Linear Planning using constraint posting, Hierarchical Planning.

UNIT - V

Natural Language Processing: Introduction, Syntactic Analysis, Semantic Analysis, Discuses and Pragmatic Processing.

Introduction and Fundamentals of Artificial Neural Networks: Biological prototype, Artificial Neuron, Single layer Artificial, Neural Networks, Multilayer Artificial Neural Networks, Training of Artificial Neural Networks.

Course Outcomes:

       Upon completion of this course students can able to:

1. Describe the key components of the artificial intelligence (AI) field
2. Describe search strategies and solve problems by applying a suitable search method
3. Describe minimax search and alpha-beta pruning in game playing.
4. Describe and apply knowledge representation
5. Describe and list the key aspects of planning
6. Describe and apply probability theorem and Bayesian networks.
7. Describe the key aspects of intelligent agents
8. Describe the key aspects of Evolutionary computation, including genetic algorithms and genetic programming.
9. Describe the key aspects of Machine learning

TEXT BOOKS

1) Artificial Intelligence- Rich E & Knight K TMH (1991)
2) Neural Computing: Theory and practice – Waserman

REFERENCE BOOK:

1. Artificial Intelligence Structures and Strategies complex problem Solving – George F. Lugar Pearson Education

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

IV Year B.Tech CSE-II SEM

L   T/P/D   C
3   1/ -/ -   4

ADHOC AND SENSOR NETWORKS
(Elective - IV)

<u>Course Objective:</u>
1. The student able to learn the fundamental concepts wireless communication technology, wireless channels, layers
2. The student can learn the issues of wireless networks.
3. The student can learn the protocols used in wireless networks, routing, quality of services and security.

UNIT I:
Introduction: Fundamentals of wireless communication technology, The electromagnetic spectrum, Radio propagation mechanisms, Characteristics of wireless channels, Modulation techniques, Multiple access techniques, Voice coding, Error control, IEEE 802 networking standard.
Issues In Adhoc Wireless Networks: Introduction, Issues in Adhoc wireless Networks, MAC layer issues, Network layer issues, Multicasting issues,Transport layer issues and other issues, Adhoc wireless Internet.

UNIT II:
Design Goals Of Mac Protocols: Issues in designing a MAC Protocol, Classification of MAC protocol, Contention Based protocols: MACAW, BTMA, MARCH, Contention based protocols with reservation: CATA, SRMA/PR and contention based MAC protocols with scheduling mechanisms: DLBPS, Other protocols: Directional MAC Protocols, multichannel Protocol.

UNIT III:
Routing Protocols For Adhoc Wireless Networks: Introduction, Issues in Designing a Routing Protocol for Adhoc Wireless Network, Classification of Routing protocols, Table-Driven Routing protocols: DSDV, CGSR, On-Demand Routing Protocols: DSR, AODV, TORA, Hybrid Routing protocols: CEDAR, ZR.
Multicast Routing In Adhoc Wireless Networks: Introduction, Issues in Designing a Multicast Routing protocol, Operation of Multicast Routing protocols, An Architecture Reference Model for Multicast Routing Protocols, Classifications of Multicast Routing protocols, Tree - Based Multicast Routing protocols: BEMRP, MZRP, MCEDAR, MAODV, ASTMRP, Mesh-Based Multicast Routing Protocols: ODMRP, DCMP, NSMP.

UNIT IV:
Transport Layer And Security Protocols For Adhoc Wireless Networks: Introduction, Issues in Designing a Transport Layer Protocol for Adhoc wireless networks, Design Goals of a Transport Layer Protocol for Adhoc wireless Networks, Classification of Transport Layer Solutions, TCP over Adhoc wireless networks, Other Transport Layer Protocols for Adhoc wireless Networks.

UNIT-V
Quality Of Service(Qos): Introduction, Issues and Challenges in providing QOS in Adhoc wireless networks, Classification of QOS Solutions, Mac Layer Solutions, Network Layer Solutions, QOS Frame work for Ad hoc wireless networks.
Security In Adhoc Wireless Networks: Network Security Requirements, Issues and challenges in Security Provisioning, Network Security Attacks, Key management, Secure Routing in Adhoc wireless Networks.

<u>Course Outcomes:</u>
After completion of the student the student able to understand the
1. Fundamentals of wireless technologies, wireless channels, adhoc sensor networks, Multicast routing, transport layer services, routing and Quality of services
2. He/she can design and develop the application programs related to adhoc and wireless communication programs in different layers and security algorithms

<u>TEXT BOOK:</u>
1. C. Siva Ram Murthy, B.S. Manoj, Adhoc Wireless Networks-Architectures and Protocols, Pearson Education, Delhi, 2005.

<u>REFERENCE BOOKS:</u>
1. C.K. Toh, Adhoc Mobile Wireless Networks Protocols and Systems, Pearson Education, 2007.
2. William Stalling, Wireless Communications and Networks, 2 ed, Pearson Education, India.
3. Jochen Schiller, Mobile Communications, 2 ed, Pearson Education.

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

IV Year B.Tech CSE-II SEM   L T/P/D C
                                                                                  3   1/ -/ - 4

COMPUTER FORENSICS
(Elective-IV)

Course Objectives:
1. Gain a working knowledge of Computer Forensics.
2. Explain the responsibilities and liabilities of a computer forensic investigator
3. Explain where digital evidence resides on computer storage devices
4. Learn how to work with Forensic tools.

UNIT I:
Computer Forensics Fundamentals: What is Computer Forensics?. Use of Computer Forensics in Law Enforcement, Computer Forensics in Law Enforcement, Computer Forensics Assistance to Human Resources/Employment Proceedings, Computer Forensics Services, Benefits of professional Forensics Methodology, Steps taken by computer Forensics Specialists.
Types of Computer Forensics Technology: Types of Military Computer Forensics Technology, Types of Law Enforcement - Computer Forensic Technology - Types of Business Computer Forensics Technology.
Computer Forensics Evidence and Capture: Data Recovery Defined- Data Back-up and Recovery- The Role of Back-up in Data Recovery- The Data Recovery Solution.

UNIT II:
Evidence Collection and Data Seizure: Why Collection Evidence? Collection Options – Obstacles – Types of Evidence – The Rules of Evidence- Volatile Evidence- General Procedure – Collection and Archiving –
Methods of Collection – Artifacts – Collection Steps – Controlling Contamination: The chain of Custody.
Duplication and preservation of Digital Evidence: Preserving the Digital Crime Scene – Computer Evidence Processing Steps – Legal Aspects of Collecting Preserving Computer Forensics Evidence. Computer Image Verification and Authentication: Special Needs of Evidential Authentication – Practical Consideration – Practical Implementation.

UNIT III:
Computer Forensics analysis and validation: Determining what data to collect and analyze, validating forensic data, addressing data – hiding techniques, performing remote acquisitions.
Network Forensics: Network Forensics overview, performing live acquisitions, developing standard procedures for network forensics, unsing network tools, examining the honeynet project.

UNIT IV:
Processing crime and incident scenes: Identifying digital evidence, collecting evidence in private-sector incident scenes, processing law enforcement crime scenes, preparing for a search, securing a computer incident or crime scene, seizing digital evidence at the scene, storing digital evidence, obtaining a digital hash, reviewing a case.
Current computer forensic tools: evaluating computer forensic tool needs, computer forensics software tools, computer forensics hardware tools, validating and testing forensics software.

UNIT V:
E-Mail investigations: Exploring the role of E-mail in investigation, exploring the role of the client and server in E-mail, investigating e-mail crimes and violations, understanding e-mail servers, using specialized e-mail forensic tools.
Cell phone and mobile device forensics: Understanding mobile device forensics, understanding acquisition procedures for cell phones and mobile devices.
Working with windows and DOS Systems: Understanding file systems, exploring Microsoft File Structures, Examining NTFS Disks, Understanding whole disk encryption, windows registry, Microsoft startup tasks, MS-DOS Startup tasks, virtual machines.

Course Outcomes:
Upon completion of this course, students should be able to:
1. Apply appropriate skills and knowledge in solving computer forensics problems.
2. Display their competence in the various forensic computing field.
3. Apply their theoretical and practical knowledge in forensic computing, into the future and emerging technology
4. Perform competitively as a technical support in any organization

TEXT BOOKS:
1. Computer forensics, computer crime investigation by John R.Vacca, Firewall Media, New Delhi.
2. Computer forensics and investigations by Nelson, Phillips Enfinger Steuart, CENGAGE Learning.

REFERENCE BOOKS:
1. Real Digital Forensics by Keith J.Jones, Rechard Bejtlich, Curtis W.Rose, Addison-Wesley Pearson Education.
2. Forensic compiling, A Tractitioneris Guide By Tony Sammes and Brain Jenkinson, Springer International Edition.
3. Computer Evidence Collection & Presentation by Christopher L.T.Brown, Firewall Media.
4. Homeland Security, Techniques & Technologies by Jesus Mena, Firewall Media
5. Software forensics Collecting Evidence from the scene of a digital crime by Robert M.Slade, TMH 2005.
6. Windows forensics by Chad Steel, Wiley India Edition.

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

IV Year B.Tech CSE-II SEM   L   T/P/D   C
                                                                 3   1/ -/ -   4

DESIGN PATTERNS
(Elective-IV)

Course Objectives:
1. Design patterns are a systematic approach that focus and describe abstract systems of interaction between classes, objects, and communication flow
2. Comprehend the nature of design patterns by understanding a small number of examples from different pattern categories, and to be able to apply these patterns in creating an OO design.
3. Given OO design heuristics, patterns or published guidance, evaluate a design for applicability, reasonableness, and relation to other design criteria.
4. Good knowledge on the documentation effort required for designing the patterns.

UNIT I:
Introduction: What Is a Design Pattern? Design Patterns in Smalltalk MVC, Describing Design Patterns, The Catalog of Design Patterns, Organizing the Catalog, How Design Patterns Solve Design Problems, How to Select a Design Pattern, How to Use a Design Pattern.

UNIT II:
A Case Study: Designing a Document Editor: Design Problems, Document Structure, Formatting, Embellishing the User Interface, and Supporting Multiple Look-and-Feel Standards, Supporting Multiple Window Systems, User Operations Spelling Checking and Hyphenation, Summary.

UNIT III:
Creational Patterns: Abstract Factory, Builder, Factory Method, Prototype, Singleton, Discussion of Creational Patterns.
Structural Pattern Part-I: Adapter, Bridge, and Composite

UNIT IV:
Structural Pattern Part-II: Decorator, Façade, Flyweight, Proxy.
Behavioral Patterns Part-I: Chain of Responsibility, Command,

UNIT V:
Behavioral Patterns Part-II: Mediator, Memento, Observer, State, Strategy, Template Method, Visitor, Discussion of Behavioral Patterns. What to Expect from Design Patterns, A Brief History, The Pattern Community An Invitation, A Parting Thought.

Course Outcomes:
Upon completion of this course, students should be able to:
1. Have a deeper knowledge of the principles of object-oriented design
2. Understand the design patterns that are common in software applications.
3. Understand how these patterns related to object-oriented design.
4. Will be able to document good design pattern structures.
5. Will able to use patterns and have deeper knowledge of patterns.

TEXT BOOK:
1. Design Patterns by Erich Gamma, Pearson Education

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

IV Year B.Tech CSE-II SEM   **L   T/P/D C**
                                                                                  3   1/ -/ -   4

STORAGE AREA NETWORKS
(Elective-IV)

Course Objectives:
1. To understand Storage Area Network characteristics and components.
2. To become familiar with the SAN vendors and their products
3. To learn Fibre Channel protocols and how SAN components use them to communicate with each other
4. To become familiar with Cisco MDS 9000 Multilayer Directors and Fabric Switches Thoroughly learn Cisco SAN-OS features.
5. To understand the use of all SAN-OS commands. Practice variations of SANOS features

UNIT I:

Introduction to Storage Technology Review data creation and the amount of data being created and understand the value of data to abusiness, challenges in data storage and data management, Solutions available for data storage, Core elements of a data center infrastructure, role of each element in supporting business activities

UNIT II:

Storage Systems Architecture, Hardware and software components of the host environment, Key protocols and concepts used by each component ,Physical and logical components of a connectivity environment ,Major physical components of a disk drive and their function, logical constructs of a physical disk, access characteristics, and performance Implications, Concept of RAID and its components , Different RAID levels and their suitability for different application environments: RAID 0, RAID 1, RAID 3, RAID 4,RAID 5, RAID 0+1, RAID 1+0, RAID 6, Compare and contrast integrated and modular storage systems ,High-level architecture and working of an intelligent storage system

UNIT III:

Introduction to Networked Storage Evolution of networked storage, Architecture, components, and topologies of FC-SAN, NAS, and IPSAN, Benefits of the different networked storage options, understand the need for long-term archiving solutions and describe how CAS fulfills the need, understand the appropriateness of the different networked storage options for different application environments.

UNIT IV:

Information Availability & Monitoring & Managing Data center List reasons for planned/unplanned outages and the impact of downtime, Differentiate between business continuity (BC) and disaster recovery (DR) ,RTO and RPO, Identify single points of failure in a storage infrastructure and list solutions to mitigate these failures ,Architecture of backup/recovery and the different backup/recovery topologies , replication technologies and their role in ensuring information availability and business continuity, Remote replication technologies and their role in providing disaster recovery and business continuity capabilities Identify key areas to monitor in a data center, Industry standards for data center monitoring and management, Key metrics to monitor for different components in a storage infrastructure, Key management tasks in a data center

UNIT V:

Securing Storage and Storage Virtualization, Information security, Critical security attributes for information systems, Storage security domains, List and analyze the common threats in each domain, Virtualization technologies, block-level and file level virtualization technologies and processes
Case Studies: The technologies described in the course are reinforced with EMC examples of actual solutions. Realistic case studies enable the participant to design the most appropriate solution for given sets of criteria.

TEXT BOOK:
1. EMC Corporation, Information Storage and Management, Wiley.

REFERENCE BOOKS:
1. Robert Spalding, "Storage Networks: The Complete Reference", Tata McGraw Hill, sborne,2003.
2. Marc Farley, "Building Storage Networks", Tata McGraw Hill ,Osborne, 2001.
3. Meeta Gupta, Storage Area Network Fundamentals, Pearson Education Limited, 2002

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

IV Year B.Tech CSE-II SEM   **L   T/P/D   C**
                                                                                                0   -/6/-   2

SEMINAR

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

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

INDUSTRY ORIENTED MINI PROJECT

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

IV Year B.Tech CSE-II SEM   **L   T/P/D   C**
                                                                                                0   -/15/-   2

PROJECT WORK

MALLAREDDY ENGINEERING COLLEGE
(Autonomous)

IV Year B.Tech CSE-II SEM   L   T/P/D   C
                                                                                                0   -/-/-   2

COMPREHENSIVE VIVA