BACHELOR OF TECHNOLOGY

Computer Science and Engineering

COURSE STRUCTURE &SYLLABUS
(Batches admitted from the Academic Year 2022 -2023)

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(Autonomous Institution-UGC, Govt. of India)
Accredited by NBA & NAAC with 'A' Grade
National Ranking by NIRF –Rank band (151-300) MHRD Govt. of India
Permanently Affiliated to JNTUH, Approved by AICTE, ISO 9001: 2015 Certified Institution
Maisammaguda, Dhulapally, Secunderabad, Kompally-500100

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COURSE STRUCTURE
I Year B. Tech – I Semester (I Semester)

S. No	Subject Code	Subject	L	T	P	C	Max. Marks INT	Max. Marks EXT
1	2200BS01	Linear Algebra and Differential Equations	3	1	0	4	40	60
2	2205ES01	Programming for Problem Solving	3	0	0	3	40	60
3	2200HS01	English	2	0	0	2	40	60
4	2203ES01	Computer Aided Engineering Graphics	1	0	4	3	40	60
	2200BS06	Applied Physics	3	1	0	4	40	60
4	2205ES61	Programming for Problem Solving Lab	0	0	3	1.5	40	60
6	2200BS61	Applied Physics Lab	1	0	3	1.5	40	60
7	2200HS61	English Language & Communication Skills Lab	0	0	2	1	40	60
8	2200MC02	French Language *	3	0	0	0	100	0
		Induction Programme						
		TOTAL	**13**	**2**	**12**	**20**	**380**	**420**

*Mandatory course: Non-credit course, 50% of scoring is required for the award of the degree

I Year B. Tech – II Semester (II-Semester)

S. No	Subject Code	Subject	L	T	P	C	Max. Marks INT	Max. Marks EXT
1	2200BS02	Advanced Calculus and Transform Techniques	3	1	0	4	40	60
2	2205ES02	Python Programming	3	0	0	3	40	60
3	2200BS07	Engineering Chemistry	3	0	0	3	40	60
4	2202ES01	Basic Electrical Engineering	3	1	0	4	40	60
5	2200BS62	Engineering Chemistry Lab	0	0	2	1	40	60
6	2202ES61	Basic Electrical Engineering Lab	0	0	2	1	40	60
	2203ES61	Engineering Workshop Lab	1	0	3	2.5	40	60
7	2205ES62	Python Programming Lab	0	0	3	1.5	40	60
8	2200MC01	Environmental Science *	1	0	0	0	100	0
		TOTAL	**14**	**3**	**10**	**20**	**420**	**480**

*Mandatory course: Non-credit course, 50% of scoring is required for the award of the degree

II Year B. Tech – I Semester (III-Semester)

S. No	Subject Code	Subject	L	T	P	C	Max. Marks	
							INT	EXT
1	2269PC01	Introduction of IOT	3	1	0	4	40	60
2	2204ES01	Analog and Digital Electronic Circuits	3	0	0	3	40	60
3	2205PC01	Data Structures and Algorithms Using Python	3	0	0	3	40	60
4	2205PC03	Discrete Mathematics	3	0	0	3	40	60
5	2205PC11	Computer Networks	3	0	0	3	40	60
6	2205PC61	Data Structures and Algorithms Using Python Lab	0	0	3	1.5	40	60
7	2205PC66	Computer Networks Lab	0	0	3	1.5	40	60
8	2205PR01	Innovative Product Development	0	0	2	1	40	60
9	2200MC03	Human values and Professional Ethics*	2	0	0	0	100	0
		TOTAL	**17**	**1**	**8**	**20**	**420**	**480**

Mandatory course: Non-credit course, 50% of scoring is required for the award of the degree

II Year B. Tech – II Semester (IV Semester)

S. No	Subject Code	Subject	L	T	P	C	Max. Marks	
							INT	EXT
1	2200BS04	Probability & Statistics	3	0	0	3	40	60
2	2200HS03	Managerial Economics and Financial Analysis	3	0	0	3	40	60
3	2205PC10	Design and Analysis of Algorithms	3	1	0	3	40	60
4	2205PC08	Data Base Management System	3	0	0	3	40	60
5	2205PC04	Object Oriented Programming through Java	3	0	0	3	40	60
6	2205PC64	Data Base Management System Lab	0	0	3	1.5	40	60
7	2205PC63	Object Oriented Programming through Java Lab	0	0	3	1.5	40	60
8	2205PR02	Innovative Product Development	0	0	2	1	40	60
9	2200MC04	Indian Constitution *	2	0	0	0	100	0
		TOTAL	**17**	**1**	**8**	**20**	**420**	**480**

Mandatory course: Non-credit course, 50% of scoring is required for the award of the degree

III- Year B. Tech – I Semester (V Semester)

Mandatory course: Non-credit course, 50% of scoring is required for the award of the degree

S. No	Course Code	Subject	L	T	P	C	Max.Marks INT	Max.Marks EXT
1	2266PC01	Artificial Intelligence	3	0	0	3	40	60
2	2269PC02	Embedded Systems Design	3	0	0	3	40	60
3	2205PC25	Automata & Compiler Designer	3	1	0	4	40	60
4		Professional Elective-1	3	0	0	3	40	60
5		Open Elective – 1	3	0	0	3	40	60
6	2266PC61	Artificial Intelligence Lab	0	0	3	1.5	40	60
7	2269PC61	Internet of Things Lab	0	0	3	1.5	40	60
8	2269PR01	Innovative Product Development-1	0	0	2	1	40	60
9	2200MC05	Technical Communications and Soft Skills*	2	0	0	0	100	-
		TOTAL	**17**	**1**	**8**	**20**	**420**	**480**

III Year B. Tech – II Semester (VI Semester)

S. No	Subject Code	Subject	L	T	P	C	Max. Marks INT	Max. Marks EXT
1	2212PC02	Full Stack Development	3	0	0	3	40	60
2	2200HS02	Professional English	3	0	0	3	40	60
3	2212PC02	Web Technologies	3	1	0	4	40	60
4	2205PE34	Professional Elective – 2	3	0	0	3	40	60
5	2212PE03	Open Elective-2	3	0	0	3	40	60
6	2269PC62	Mobile APP. Development Lab	0	0	3	1.5	40	60
7	2212PC62	Web Technologies Lab	0	0	3	1.5	40	60
8	2205PR02	Innovative Product Development-2	0	0	2	1	40	60
9	2200MC06	Indian Tradition Knowledge *	2	0	0	0	100	0
		TOTAL	**17**	**1**	**8**	**20**	**420**	**480**

Mandatory course: Non-credit course, 50% of scoring is required for the award of the degree Industry Oriented Mini Project/ Internship - During Summer Vacation-Evaluation

IV -Year B. Tech – I Semester (VII Semester)

S. No	Subject Code	Subject	L	T	P	C	Max. Marks	
							INT	EXT
1	2205PC05	Machine Learning	3	0	0	3	40	60
2	2269PC06	Cloud Architecture and Deployment Models	3	0	0	3	40	60
3		Professional Elective -3	3	0	0	3	40	60
4		Professional Elective -4	3	0	0	3	40	60
5		Open Electives-3	3	0	0	3	40	60
6	2205PC67	Machine Learning Lab	0	0	2	1	40	60
7	2269PC64	Cloud Architecture and Deployment Lab	0	0	2	1	40	60
8	2269PR03	Innovative Product Development-3	0	0	2	1	40	60
9	2269PR04	Industry Oriented Mini Project /Internship	0	0	2	1	40	60
10	2269PR05	Project-I	0	0	2	1	40	60
11	2200MC07	Gender Sensitization*	2	0	0	0	100	0
		TOTAL	**17**	**0**	**10**	**20**	**560**	**540**

Mandatory course: Non-credit course, 50% of scoring is required for the award of the degree
*Summer between III & IV Year: Mini Project

IV Year B. Tech – II Semester (VIII Semester)

S. No	Subject Code	Subject	L	T	P	C	Max. Marks	
							INT	EXT
1		Professional Elective-5	3	0	0	3	40	60
2		Professional Elective -6	3	0	0	3	40	60
3		Open Elective -4	3	0	0	3	40	60
4	2269PR03	Technical Seminar	2	0	0	2	100	0
5	2269PR04	Innovation Startup & Entrepreneurship	0	0	6	3	40	60
6	2269PR05	Project-II	0	0	12	6	40	60
		TOTAL	**11**	**0**	**18**	**20**	**300**	**300**

Semester	I-I	I-II	II-I	II-II	III-I	III-II	IV-I	IV-II	TOTAL
Credits	20	20	20	20	20	20	20	20	160

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AAAA+ Rated by Digital Learning Magazine, AAA+ Rated by Careers 360 Magazine
6thRank CSR,Platinum Rated by AICTE-CII Survey, Top 100 Rank band by ARIIA, MHRD, Govt. of India
National Ranking-Top 100 Rank band by Outlook, National Ranking-Top 100 Rank band by Times News Magazine

PROFESSIONAL ELECTIVES

Professional Elective-I		Professional Elective-II		Professional Elective-III	
2066PE07	Principles of Neural Networks	2005PE03	Principles of Natural language Processing	2005PE13	Data Mining
2012PE01	Foundations of Data Science	2012PE02	Social Network Analytics	2012PE03	Web Mining
2005PE02	Computer Graphics and Multimedia	2005PE34	Design Patterns	2005PE35	IoT Security
Professional Elective –IV		Professional Elective –V		Professional Elective –VI	
2005PC67	Introduction to Machine Learning	2005PE09	Principles of Deep Learning	2005PE11	Web Services
2012PE04	Business Analytics	2012PE05	Big Data Analytics	2012PE06	Distributed Trustand Block Chain Technology
2005PE33	IOT in Automation	2005PE10	Distributed Systems	2062PE03	Cyber Security

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2200BS01) LINEAR ALGEBRA AND DIFFERENTIAL EQUATIONS

B.TECH I YEAR I SEMESTER   **L T P C**
                                                                        3 1 0 4

Course Objectives:. To learn

- Types of Matrices and their properties, concept of a rank of the matrix and applying this concept to know the consistency and solving the system of linear equations.

- Concept of Eigen values and Eigenvectors and to reduce the quadratic form to canonical form.

- Methods of solving the linear differential equations of first order, equations solvable for p, y and x.

- Methods of solving the linear differential equations of higher order.

- Partial differentiation, concept of total derivative, finding maxima and minima of function of two and three variables.

Course Outcomes:

After learning the contents of this paper, the student must be able to

- Write the matrix representation of a set of linear equations and to analyze the solution of the system of equations

- Find the Eigen values and Eigen vectors and reduce the quadratic form to canonical form using orthogonal transformations.

- Identify whether the given differential equation of first order is exact or not and solve the first order differential equations.

- Solve higher differential equation and apply the concept of differential equation to real world problems.

- Find the extreme values of functions of two variables with/ without constraints.

UNIT-I:

Matrices: Types of Matrices, Symmetric; Skew-symmetric; Hermitian; Skew-Hermitian; Orthogonal matrices; Unitary Matrices; Rank of a matrix by Echelon form and Normal form, Inverse of Non-singular matrices by Gauss-Jordan method; System of linear equations; Solving system of Homogeneous and Non-Homogeneous equations. Gauss elimination method; Gauss Seidel Iteration Method.

UNIT-II:

Eigen Values and Eigen Vectors: Eigen values and Eigenvectors and their properties; Diagonalization of a matrix; Cayley-Hamilton Theorem (without proof); Finding inverse and powers of a matrix by Cayley-Hamilton Theorem; Linear Transformation and Orthogonal Transformation; Quadratic forms and Nature of the Quadratic Forms; Reduction of Quadratic form to Canonical form by Orthogonal Transformation.

UNIT-III:

First Order ODE: Exact, Linear and Bernoulli's equations; Newton's law of cooling, Law of Natural Growth and Decay; Equations not of first degree: Equations solvable for p, y and x, Clairaut's type.

UNIT-IV:

Ordinary Differential Equations of Higher Order: Second order linear differential equations with constant coefficients: Non-Homogeneous terms of the type e^{ax}, *sin ax, cos ax*, polynomials in x, $e^{ax}V(x)$ and *x V(x)*, Method of Variation of Parameters.

UNIT-V:

Multivariable Calculus: Definitions of Limit and Continuity. Partial Differentiation; Euler's Theorem; Total derivative; Jacobian; Functional dependence & independence, Maxima and minima of functions of two variables and three variables using method of Lagrange's multipliers.

TEXTBOOKS:
1. B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36thEdition, 2010.
2. R. K. Jain and S.R.K. Iyengar, Advanced Engineering Mathematics,NarosaPubishers, 4th Edition, 2014.

REFERENCES:
1. Michael Greenberg, Advanced Engineering Mathematics, Pearson Education, 2nd Edition, 1998.
2. Erwin Kreyszig, Advanced Engineering Mathematics, John Wiley & Sons,
3. Ramana B.V., Higher Engineering Mathematics, Tata McGraw Hill New Delhi, 11thReprint, 2017.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN
2205ES01: PROGRAMMING FOR PROBLEM SOLVING

B.TECH I YEAR I SEMESTER   **L T P C**
                                                                                  3 0 0 4

Course Objectives:
- To learn the fundamentals of computers.
- To understand the various steps in program development.
- To learn the syntax and semantics of C programming language.
- To learn the usage of structured programming approach in solving problems.

Course Outcomes: The student will learn
- To write algorithms and to draw flowcharts for solving problems.
- To convert the algorithms/flowcharts to C programs.
- To code and test a given logic in C programming language.
- To decompose a problem into functions and to develop modular reusable code.
- To use arrays, pointers, strings and structures to write C programs.
- Searching and sorting problems.

UNIT I:
Introduction: Introduction to components of a computer system: disks, primary and secondary memory, processor, operating system, compilers, creating, compiling and executing a program etc., Number systems.

Introduction to Algorithms: steps to solve logical and numerical problems. Representation of Algorithm, Flowchart/Pseudo code with examples, Program design and structured programming. Introduction to C Programming Language:

Structure of a C program, Identifiers, variables (with data types and space requirements), Syntax and Logical Errors in compilation, object and executable code, Operators- Arithmetic operators, relational and logical operators, increment and decrement operators, Bitwise operators, conditional operator, assignment operator, expressions and precedence, Expression evaluation, type conversion, typedef, The main method and command line arguments.

I/O: Simple input and output with scanf and printf, formatted I/O, Introduction to stdin, stdout and stderr.

UNIT II:
Conditional Branching and Loops: Writing and evaluation of conditionals and consequent branching with if, if-else, switch-case, ternary operator, goto, Iteration with for, while, do while loops

Arrays: one and two dimensional arrays, creating, accessing and manipulating elements of arrays.

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Strings: Introduction to strings, handling strings as array of characters, basic string functionsavailable in C (strlen, strcat, strcpy, strstr etc.), arrays of strings

UNIT – III

Functions: Designing structured programs, declaring a function, Signature of a function, Parameters and return type of a function, passing parameters to functions, call by value, Passing arrays to functions, passing pointers to functions, idea of call by reference, Some C standard functions and libraries, Passing 1-D arrays, 2-D arrays tofunctions

Recursion: Simple programs, such as Finding Factorial, Fibonacci series, Towers of Hanoi etc., Limitations of Recursive functions.

Storage Classes - extern, auto, register, static, scope rules, block structure.

UNIT IV:

Structures: Defining structures, initializing structures, unions, Array of structures

Pointers: Idea of pointers, Defining pointers, Pointers to Arrays and Structures, pointers to pointers ,Use of Pointers in self-referential structures, usage of self referential structures in linked list (no implementation) Enumeration data type and bit-fields.

Dynamic Memory Management functions, Preprocessing Directives, Preprocessor: Commonly used Preprocessor commands like include, define, undef, if, ifdef, ifndef .

UNIT – V

File Handling: Files: Text and Binary files, Creating and Reading and writing text and binary files, Appending data to existing files, Writing and reading structures using binary files, Random access using fseek, ftell and rewind functions

Introduction to Algorithms: Algorithms for finding roots of quadratic equations, finding minimum and maximum numbers of a given set, finding if a number is prime number, etc. Basic searching in an array of elements (linear and binary search techniques), Basic algorithms to sort array of elements (Bubble, Insertion and Selection sort algorithms), Basic concept of order of complexity through the example programs

Text Books:

1. Computer Science: A Structured Programming Approach Using C, B. A. ForouzanandR. F.Gilberg, Third Edition, Cengage Learning.
2. Programming in C. P. Dey and M Ghosh , Second Edition, Oxford University Press.

Reference Books:

1. The C Programming Language, B.W. Kernighan and Dennis M. Ritchie, Second Edition,Pearson education.
2. Programming with C, B. Gottfried, 3rd edition, Schaum's outlines, McGraw Hill Education(India) PvtLtd.
3. C From Theory to Practice, G S. Tselikis and N D. Tselikas,CRCPress.
4. Basic computation and Programming with C, Subrata Saha and S. Mukherjee, Cambridge University Press

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

2200BS06: APPLIED PHYSICS

B.TECH I YEAR II SEMESTER   **L T P C**
3 1 0 4

Course Objectives:
- Students will demonstrate skills in scientific inquiry, problem solving and laboratory techniques.
- Students will be able to demonstrate competency and understanding of the concepts found in Quantum Mechanics, Fiber optics and lasers, Semiconductor physics.
- The graduates will be able to solve non-traditional problems that potentially draw on knowledge in multiple areas of physics.
- To study applications in engineering like memory devices, transformer core and electromagnetic machinery.

Course Outcomes: Upon graduation:
- The student would be able to learn the fundamental concepts on Quantum behavior of matter in its micro state.
- The knowledge of fundamentals of Semiconductor physics, Optoelectronics, Lasers and fibre optics enable the students to apply to various systems like communications, solar cell, photo cells and so on.
- Design, characterization and study of properties of material help the students to prepare new materials for various engineering applications.
- The course also helps the students to have exposure on dielectric materials and magnetic materials.

UNIT-I: Quantum Mechanics:

Introduction to quantum physics, Black body radiation, Photoelectric effect, Compton effect experiment and Compton shift, Wave-particle duality, de-Broglie's hypothesis, Davisson and Germer experiment, Heisenberg's Uncertainty principle, physical significance of Wave function (ψ), Schrodinger's time independent wave equation, Particle in one dimensional box.

UNIT-II: Semiconductor Physics:

Intrinsic and Extrinsic semiconductors, Fermi level in intrinsic and extrinsic semiconductors, calculation of carrier concentration in intrinsic and extrinsic semiconductors, Carrier generation and recombination, Carrier transport: diffusion and drift, Hall effect: determination of Hall coefficient and experiment, Hall voltage, direct and indirect band gap semiconductors, p-n junction diode: energy band diagram for open and closed circuits, Zener diode and its V-I Characteristics and applications.

UNIT-III: Optoelectronics:

Radiative and non-radiative recombination mechanisms in semiconductors, Types of luminescence: Electro luminescence and Photo luminescence, LED: Device structure, Materials, Characteristics and figures of merit, Semiconductor photo detectors: Solar cell: working principle, structure, Materials, PIN and Avalanche photo detectors: working principle, structure, Materials, and Characteristics and applications.

UNIT-IV: Lasers and Optical fibers:

Lasers: Characteristics of Lasers, interaction of radiation with matter: stimulated absorption, spontaneous and stimulated emission, Einstein's relations, Principle and working of Laser: Population inversion, Pumping mechanisms, Types of Lasers: Ruby laser, He-Ne laser, Semiconductor lasers, Applications of laser. Fiber Optics: Introduction to Optical fiber, Optical fiber as a dielectric wave guide, Total internal reflection, Acceptance angle, Acceptance cone and Numerical aperture, mode and transmission of signal through Step and Graded index fibers, Losses associated with optical fibers, Applications of optical fibers in communication system (block diagram) and in other fields.

UNIT-V: Dielectric and Magnetic Properties of Materials:

Electric dipole, dipole moment, dielectric constant, polarizability, electric displacement, electric susceptibility, types of polarization: electronic, ionic and orientation (qualitative) polarizations, calculation of polarizabilities of electronic and ionic polarization, Internal fields in a solid, Clausius-Mossotti equation, Ferroelectrics, Piezo electrics and Pyro electrics, Applications of dielectrics, Magnetization, field intensity, magnetic field induction, permeability   and susceptibility, Bohr magneton, Classification of magnetic materials on the basis of magnetic moment, explanation of hysteresis curve based on domain theory, soft and hard magnetic materials, applications of magnetic materials.

TEXT BOOKS:

1. Engineering Physics, B.K. Pandey, S. Chaturvedi - Cengage Learing.

2. Halliday and Resnick, Physics - Wiley.

3. A textbook of Engineering Physics, Dr. M. N. Avadhanulu, Dr. P.G. Kshirsagar -
   S. Chand

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN
2200HS01: ENGLISH

B.TECH I YEAR II SEMESTER

L T P C
2 0 0 2

INTRODUCTION

In view of the growing importance of English as a tool for global communication and the consequent emphasis on training students to acquire language skills, the syllabus of English has been designed to develop linguistic, communicative and critical thinking competencies of Engineering students.

In English classes, the focus should be on the skills development in the areas of vocabulary, grammar, reading and writing. For this, the teachers should use the prescribed text for detailed study. The students should be encouraged to read the texts leading to reading comprehension and different passages may be given for practice in the class. The time should be utilized for working out the exercises given after each excerpt, and also for supplementing the exercises with authentic materials of a similar kind, for example, newspaper articles, advertisements, promotional material etc. The focus in this syllabus is on skill development, fostering ideas and practice of language skills in various contexts and cultures.

Course Objectives: The course will help to:

a. Improve the language proficiency of students in English with an emphasis on Vocabulary, Grammar, Reading and Writing skills.
b. To enhance competencies in writing essays and gist of the passage in words.
c. Equip students to study academic subjects more effectively and critically using the theoretical and practical components of English syllabus.
d. Develop study skills and communication skills in formal and informal situations.

Course Outcomes: Students should be able to:

1. Use English Language effectively in spoken and written forms.
2. Comprehend the given texts and respond appropriately.
3. Communicate confidently in various contexts and different cultures.
4. Acquire basic proficiency in English including reading and listening, comprehension, writing and speaking skills.

UNIT –I

'The Raman Effect' from the prescribed textbook 'English for Engineers' published by Cambridge University Press.

Vocabulary Building: The Concept of Word Formation --The Use of Prefixes and Suffixes.

Grammar: Identifying Common Errors in Writing with Reference to Articles and Prepositions.

Reading: Reading and Its Importance- Techniques for Effective Reading.
Basic Writing Skills: Sentence Structures - Use of Phrases and Clauses in Sentences-Importance of Proper Punctuation- Techniques for writing precisely – Paragraph writing – Types, Structures and Features of a Paragraph - Creating Coherence-Organizing Principles of Paragraphs in documents.

UNIT –II

'Ancient Architecture in India' from the prescribed textbook 'English for Engineers' published by Cambridge University Press.

Vocabulary: Homonyms, Homophones and Homographs. Acquaintance with Prefixes and Suffixes from Foreign Languages in English to form Derivatives-Words from Foreign Languages and their Use in English.

Grammar: Identifying Common Errors in Writing with Reference to Noun-pronoun Agreement and Subject-Verb Agreement.

Reading: Improving Comprehension Skills – Techniques for Good Comprehension.

Writing: Format of a Formal Letter-Writing Formal Letters **-** E.g.., Letter of Complaint, Letter of Requisition, Job Application with Resume.

UNIT –III

'Blue Jeans' from the prescribed textbook 'English for Engineers' published by Cambridge University Press.

Vocabulary: Synonyms and Antonyms

Grammar: Identifying Common Errors in Writing with Reference to Misplaced Modifiers and Tenses and **Question Tags.**

Reading: Sub-skills of Reading- Skimming and Scanning.

Writing: Nature and Style of Sensible Writing- Defining- Describing Objects, Places and Events – Classifying- Providing Examples or Evidence, E-mail writing and practices.

UNIT –IV

'What Should You Be Eating' from the prescribed textbook 'English for Engineers' published by Cambridge University Press.

Vocabulary: Idioms and phrases, **Phrasal Verbs** and One-word substitutions.

Grammar: Active voice and Passive voice- Redundancies and Clichés in Oral and Written Communication.

Reading: Comprehension**-** Intensive Reading and Extensive Reading.

Writing: Writing Practices--Writing Introduction and Conclusion - Essay Writing-Précis Writing.

UNIT –V

'How a Chinese Billionaire Built Her Fortune' from the prescribed textbook 'English for Engineers' published by Cambridge University Press.

Vocabulary: Standard Abbreviations in English and Technical Vocabulary and their usage.

Grammar: Reported speech and Common Errors in English.

 Reading: Reading Comprehension-Exercises for practice.

Writing: Report writing - Introduction – Characteristics of a Report – Categories of Reports, Formats-Structure of Reports (Manuscript Format) -Types of Reports - Writing a Report.

Prescribed Textbook:

1. **Sudarshana, N.P. and Savitha, C. (2018). English for Engineers. Cambridge UniversityPress.**

References:

1. Swan, M. (2016). Practical English Usage. Oxford University Press.
2. Kumar, S and Lata, P.(2018). Communication Skills. Oxford University Press.
3. Wood, F.T. (2007).Remedial English Grammar.Macmillan.
4. Zinsser, William. (2001). On Writing Well. Harper Resource Book.
5. Hamp-Lyons, L. (2006).Study Writing. Cambridge University Press.
6. Exercises in Spoken English. Parts I –III. CIEFL, Hyderabad. Oxford University Press.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN
2203ES01: COMPUTER AIDED ENGINEERING GRAPHICS

B.TECH I YEAR II SEMESTER

L T P C
1 0 4 3

Course Objectives:

1. To enable the students with various concepts like Dimensioning, Conventions and standards related to working drawing in order to become professionally efficient and to introduce fundamental concepts of curves used in engineering,
2. Students are capable to understand the Orthographic Projections of Points and Lines and are able to improve their visualization skills so that they can apply these skills in developing the new products.
3. Understands and becomes efficient in applying the concept of Orthographic Projections of Points, Lines and Planes in industrial applications
4. Can employ freehand 3D pictorial sketching to aid in the visualization process and to efficiently communicate ideas graphically.
5. Analyze a drawing and can efficiently communicate ideas graphically and Draw the 3D views using CAD.

Course Outcomes:

1. Gets knowledge on usage of various drawing instruments and capable to draw various curves like conic curves, cycloidal curves and involutes.
2. Understand the Orthographic Projections of Points and Lines and are able to improve their visualization skills so that they can apply these skills in developing the new products.
3. Understand about orthographic projection and able to draw planes and solids according to orthographic projections.
4. Can employ freehand 3D pictorial sketching to aid in the visualization process and to draw the 3D views using CAD software.
5. To convert and draw the given orthographic view to isometric view using CAD software and vice versa.

UNIT-I:
Introduction to AutoCAD Software:
The Menu System, Toolbars (Standard, Object Properties, Draw, Modify and Dimension), Drawing Area (Background, Crosshairs, Coordinate System), Dialog boxes and windows, Shortcut menus (Button Bars), The Command Line, The Status Bar, Different methods of zoom as used in CAD, Select and erase objects.

Introduction to Engineering Drawing:
Principles of Engineering drawing and their significance, Conventions, Drawing Instruments

Engineering Curves: Construction of Ellipse, Parabola and Hyperbola – General and Special   methods; Cycloidal curves- Epicycloids and Hypocycloids.

UNIT-II:
Orthographic Projections, Projections of Points & Straight Lines: Principles of Orthographic Projections – Conventions; Projections of Points in all positions; Projections of lines Parallel to one

Plane and Perpendicular to other Plane and Vice-versa - Inclined to one Plane and Parallel to other Plane and Vice-versa - Surface inclined to both the Planes.

UNIT-III:
Projections of Planes: Projections of Planes- Surface Parallel to one Plane and Perpendicular to other Plane and Vice-versa – Surface Inclined to one Plane and Parallel to other Plane and Vice-versa - Surface Inclined to both the Planes.

UNIT-IV:
Projections of Regular Solids: Projections of Regular Solids-Parallel to one Plane and Perpendicular to other Plane and vice-versa- inclined to one Plane and Parallel to other Plane and vice-versa- Inclined to both the Planes– Prisms, Pyramids, Cylinder and Cone.

UNIT-V:
Isometric Projections: Principles of Isometric projection – Isometric Scale, Isometric Views, Conventions; Isometric Views of lines, Planes, Simple and Compound Solids

Conversion of Isometric Views to Orthographic Views and Vice-versa, Conventions

Introduction to Solid Modeling: Creation of simple solid models relevant to the domain.

TEXT BOOKS

1. Engineering Drawing, N.D. Bhatt – N.D. Bhatt & V.M Panchal, 48th Edition, 2005 Charotar Publishing House, and Gujarat.
2. "Computer Aided Engineering Drawing"by Dr. M H Annaiah, Dr C N Chandrappa and Dr B Sudheer Premkumar Fifth edition, New Age International Publishers.
3. Engineering Drawing by K.Venu Gopal& V.Prabu Raja New Age Publications.

REFERENCES

1. Engineering drawing – P.J. Shah .S.Chand Publishers.
2. Engineering Drawing / Basant Agarwal and McAgarwal / McGraw Hill
3. Engineering Drawing- Johle/Tata Macgraw Hill Book Publisher.
4. Computer Aided Engineering Drawing – S. Trymbaka Murthy, - I.K. International Publishing House Pvt. Ltd., New Delhi, 3rd revised edition-2006.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN
2200MC02: FRENCH LANGUAGE

B.TECH I YEAR II SEMESTER   **L T P C**

                                                                     2 0 0 0

Introduction:

In view of the growing importance of foreign languages as a communication tool in some countries of the world, French has been identified as one of the most popular languages after English. As a result, French program is introduced to develop the linguistic and communicative skills of engineering studentsand to familiarize them to the French communication skills. This course focuses on basic oral skills.

Course Objectives:

- To inculcate the basic knowledge of the French language.
- To hone the basic sentence constructions in day to day expressions for communication intheir vocation.

Course Outcomes

- The students will be able to communicate in French at A1level.
- The student will have an advantage in the competitive job market.
- This course benefits the graduates when pursuing study *opportunities* in the countrieswhere French is the official language.

UNIT - I:

Speaking: Introduction to the French language and culture – Salutations - French alphabet - Introducing people
Writing: Understand and fill out a form
Grammar: The verbs "to be ' and "to have " in the present tense of the indicative Vocabulary:The numbers from 1 to 20 - Professions - Nationalities

UNIT - II:

Speaking: Talk about one's family – description of a person - express his tastes and preferences -express possession - express negation Writing: Write
and understand a short message
Grammar: Nouns (gender and number) - Articles - The –er verbs in the present – Possessiveadjectives - Qualifying adjectives
Vocabulary: The family – Clothes - Colors - The numbers from 1 to 100 - The classroom

UNIT - III

Speaking: Talk about your daily activities - be in time - ask and indicate the date and time –talkabout sports and recreation - express the frequency Writing: A letter to a friend

Grammar - The expression of time – Their verbs in the present - The verbs do, go, take, come,
-Adverbs - Reflexive verbs
Vocabulary - The days and months of theyear-The sports -Hobbies

UNIT - IV

Speaking: Express the quantity - ask and give the price - express the need, the will and thecapacity -compare (adjective) - speak at the restaurant / in the shops
Writing: A dialogue between a vendor and a customer at the market
Grammar: Verbs "to want", "to can" - Express capacity / possibility - Express will / desire –thefuturetense
Vocabulary: The food – Meals - Fruits and vegetables – The parts of the body

UNIT - V

Speaking: Express the prohibition and the obligation - describe an apartment - talk about the weather /ask the weather - ask the opinion - give your opinion - express your agreement or disagreement
Writing: Descriptions
Grammar: Demonstrative adjectives -Prepositions - The verb 'must' to indicate obligation and necessityin the present
Vocabulary: Seasons – Holidays - The city – Furniture
NOTE: The students are exposed to simple listening and reading activities.

REFERENCE BOOKS

1. Apprenons le Français 1& 2, New Saraswati House,2015
2. A propos, A1, Langers International,2010
3. Easy French Step-by-step by Myrna Bell Rochester
4. Ultimate French Beginner-Intermediate (Course book) By Livid Language
5. Ã L' Aventure: An Introduction to French Language and Francophone Cultures byEvelyneCharvier-Berman, Anne C. Cummings.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN
2200BS61: APPLIED PHYSICS LAB

B.TECH I YEAR II SEMESTER.   **L T P C**
                                                                            0 0 3 1.5

List of Experiments

Course Objectives:

1. Students will demonstrate skills in scientific inquiry, problem solving and laboratory techniques.
2. Students will be able to demonstrate competency and understanding of the concepts found in Quantum Mechanics, Fiber optics and lasers, Semiconductor physics and a broad base of knowledge in physics.
3. The graduates will be able to solve non-traditional problems that potentially draw on knowledge in multiple areas of physics.
4. To study applications in engineering like memory devices, transformer core and electromagnetic machinery.

Course Outcomes: Upon graduation

1. The student would be able to learn the fundamental concepts on Quantum behavior of matter in its micro state.
2. The knowledge of fundamentals of Semiconductor physics, Optoelectronics, Lasers and fibre optics enable the students to apply to various systems like communications, solar cell, photo cells and so on.
3. Design, characterization and study of properties of material help the students to prepare new materials for various engineering applications.
4. The course also helps the students to be exposed to the phenomena to have exposure on dielectric materials and magnetic materials.

Note: Any 8 Experiments to be performed

1. **Energy gap of a PN junction diode**

   To determine the energy band gap of a semiconductor p-n junction diode

2. **Solar Cell**

   To study the Characteristics of a given Solar Cell

3. **Light Emitting Diode**

   To study the V-I characteristics of a Light Emitting Diode

4. **Stewart and Gee's Experiment**

   To determine the magnetic induction at the center and at several points on the axis of a circular coil

5. **HALL Effect Experiment**

   Determination of hall coefficient and Hall voltage

   To calculate the Hall coefficient and the carrier concentration of the sample material.

6. Photoelectric Effect
   To determine the work function of a given material.

7. LASER
   To study the characteristics of LASER diode Sources.

8. A) Optical Fiber Numerical Aperture
   To determine the numerical Aperture (NA) of the given optical fiber

B) Optical Fiber Bending Loss
   To determine the loss caused in optical fibers in dB due to macro bending of the fiber

9. A) LCR series Circuit
   To study the frequency response of LCR series circuits and to determine the Resonant Frequency.

B) LCR Parallel Circuit
   To study the frequency response of LCR parallel circuits and to determine the Resonant Frequency.

10. R-C Circuit
   To determine the time constant of the given RC circuit

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

2205ES61: PROGRAMMING FOR PROBLEM SOLVING LAB

B.TECH I YEAR I SEMESTER   **L T P C**
                                                              0 0 3 1.5

Course Objectives: The students will learn the following:

- To work with an IDE to create, edit, compile, run and debug programs
- To analyze the various steps in program development.
- To develop programs to solve basic problems by understanding basic concepts in C like operators, control statements etc.
- To develop modular, reusable and readable C Programs using the concepts like functions, arrays etc.
- To write programs using the Dynamic Memory Allocation concept.
- To create, read from and write to text and binary files

Course Outcomes: The candidate is expected to be able to:

- formulate the algorithms for simple problems
- translate given algorithms to a working and correct program
- correct syntax errors as reported by the compilers
- identify and correct logical errors encountered during execution
- represent and manipulate data with arrays, strings and structures
- use pointers of different types
- create, read and write to and from simple text and binary files
- modularize the code with functions so that they can be reused

Practice sessions:

1. Write a simple program that prints the results of all the operators available in C (including pre/ post increment, bitwise and/or/not, etc.). Read required operand values from standard input.
2. Write a simple program that converts one given data type to another using auto conversion and casting. Take the values form standard input.

Simple numeric problems:

a) Write a program for fiend the max and min from the three numbers.
b) Write the program for the simple, compound interest.
c) WriteprogramthatdeclaresClassawardedforagivenpercentageofmarks,wheremark
   <40%= Failed, 40% to <60% = Second class, 60% to <70%=First class, >= 70% = Distinction. Read percentage from standard input.
d) Write a program that prints a multiplication table for a given number and the number of rows in the table.
   For example, for a number 5 and rows = 3, the output should be:5 x 1

$= 5$

5 x 2=10

5 x 3=15

e) Write a program that shows the binary equivalent of a given positive number between 0 to255.

Expression Evaluation:

i) A building has 10 floors with a floor height of 3 meters each. A ball is dropped from the top of the building. Find the time taken by the ball to reach each floor. (Use the formulas $= ut+(1/2)at^2$ where u and a are the initial velocity in m/sec $(= 0)$ and acceleration in m/sec^2 $(= 9.8m/s^2)$).

ii) Write a C program, which takes two integer operands and one operator from the user, performs the operation and then prints the result. (Consider the operators +,-,*, /, % and use Switch Statement)

iii) Write a program that finds if a given number is a prime number

iv) Write a C program to find the sum of individual digits of a positive integer and test given number is palindrome.

v) 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.

vi) Write a C program to generate all the prime numbers between 1 and n, where n is a value supplied by the user.

vii) Write a C program to find the roots of a Quadratic equation.

viii) Write a C program to calculate the following, where x is a fractional value. $1-x/2 +x^2/4-x^3/6$

ix) WriteaCprogramtoreadintwonumbers,xandn,andthencomputethesumofthis geometricprogression:$1+x+x^2+x^3+$ .... $+x^n$.Forexample:ifnis3andxis5, then the program computes $1+5+25+125$.

Arrays and Pointers and Functions:

a) Write a C program to find the minimum, maximum and average in an array of integers.

b) Write a functions to compute mean, variance, Standard Deviation, sorting of n elements insingle dimension array.

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

   i. Addition of Two Matrices

   ii. Multiplication of Two Matrices

   iii. Transpose of a matrix with memory dynamically allocated for the new matrix as rowand column counts may not be same.

d) Write C programs that use both recursive and non-recursive functionsTo

find the factorial of a given integer.

   i) To find the GCD (greatest common divisor) of two givenintegers.

   ii) To find x^n

e) Write a program for reading elements using pointer into array and display the values usingarray.

f) Write a program for display values reverse order from array usingpointer.

g) Write a program through pointer variable to sum of n elements fromarray.

Strings

a) Write a C program to convert a Roman numeral ranging from I to L to its decimal equivalent.

b) Write a C program that converts a number ranging from 1 to 50 to Romanequivalent

c) Write a C program that uses functions to perform the followingoperations:

*   To insert a sub-string in to a given main string from a givenposition.
*   To delete n Characters from a given position in a givenstring.

d) Write a C program to determine if the given string is a palindrome or not (Spelled same inboth directions with or without a meaning like madam, civic, noon, abcba,etc.)

e) Write a C program that displays the position of a character ch in the string S or – 1 if S doesn't contain ch.

f) Write a C program to count the lines, words and characters in a giventext.

Structures & Unions:

a) Write a C program that uses functions to perform the following operations usingStructure

*   Reading a complex number
*   Writing Complex Number
*   Addition of 2 Complex Numbers
*   Multiplication of two complex numbers

b) Write a C program to store information of 5 students using structures.

c) Write a C program to Access all structures members using pointer structure variable.

d) Write a C program to access members of union?

Files

a) Write a C program to display the contents of a file to standard output device.

b) Write a C program which copies one file to another, replacing all lowercase characterswith their upper case equivalents.

c) Write a C program to count the number of times a character occurs in a text file. The filename and the character are supplied as command line arguments.

d) Write a C program that does the following:

e) It should first create a binary file and store 10 integers, where the file name and 10 values aregiveninthecommandline.(hint:convertthestringsusingatoifunction)Nowthe

program asks for an index and a value from the user and the value at that index should be changed to the new value in the file. (hint: use fseek function).The program should then read all 10 values and print them back.

f) Write a C program to merge two files into a third file (i.e., the contents of the firs t file followed by those of the second are put in the third file).

Miscellaneous:

a. Write a menu driven C program that allows a user to enter n numbers and then choose between finding the smallest, largest, sum, or average. The menu and all the choices are to be functions.

Use a switch statement to determine what action to take. Display an error message if an invalid choice is entered.

b. Write a C Program to construct a pyramid of numbers as follows:1

*	1	1	*
* *	2 3	2 2	* *
* * *	4 5 6	3 3 3	* * *
		4 4 4 4	* * * *

c. Write a C Program implement Student Data Base System Using Files &Structures.

Sorting and Searching:

a. Write a C program that uses non recursive function to search for a Key value in a givenlist of integers using linear search method.

b. Write a C program that uses non recursive function to search for a Key value in a given sorted list of integers using binary search method.

c. Write a C program that implements the Bubble sort method to sort a given list of integersin ascending order.

d. Write a C program that sorts the given array of integers using selection sort in descendingorder

e. Write a C program that sorts the given array of integers using insertion sort in ascendingorder

f. Write a C program that sorts a given array of names

Suggested Reference Books for solving the problems:

i. Byron Gottfried, Schaum's Outline of Programming with C, McGraw-Hill

ii. B.A. Forouzan and R.F. Gilberg C Programming and Data Structures, Cengage Learning,(3rd Edition)

iii. Brian W. Kernighan and Dennis M. Ritchie, The C Programming Language, Prentice Hallof India

iv. R.G. Dromey, How to solve it by Computer, Pearson(16thImpression)

v. Programming in C, Stephen G. Kochan, Fourth Edition, Pearson Education.

vi. Herbert Schildt, C: The Complete Reference, Mc Graw Hill,4thEdition

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN
2202ES01: BASIC ELECTRICAL ENGINEERING

B.TECH I YEAR II SEMESTER   **L T P C**
                                                                 3 1 0 4

Course Objectives:
1. To introduce the concepts of electrical circuits and its components
2. To understand DC circuits and AC single phase & three phase circuits
3. To study and understand the different types of DC/AC machines and Transformers.
4. To import the knowledge of various electrical installations.
5. To introduce the concept of power, power factor and its improvement.

Course Outcomes:
   After learning the course the student will be able to
1. Analyze and solve electrical circuits using network laws and theorems.
2. Understand and analyze basic electric circuits
3. Study the working principles of various electrical machines
4. Introduce components of Low Voltage Electrical Installations

UNIT-I:
D.C. Circuits: Electrical circuit elements (R, L and C), voltage and current sources, KVL&KCL, analysis of simple circuits with DC excitation. Superposition, Thevenin and Norton Theorems. Time-domain analysis of first-order RL and RC circuits.

UNIT-II
A.C. Circuits: Representation of sinusoidal waveforms, peak and rms values, phasor representation, real power, reactive power, apparent power, power factor, Analysis of single- phase AC circuits consisting of R, L, C, RL, RC, RLC combinations (series and parallel), resonance in series RLC circuit. Three-phasebalanced circuits, voltage and current relations in star and delta connections.

UNIT-III:
Transformers: Ideal and practical transformer, equivalent circuit, losses in transformers, regulation and efficiency. Auto-transformer and three-phase transformer connections.

UNIT-IV:
Electrical Machines: Generation of rotating magnetic fields, Construction and working of a three-phase induction motor, Significance of torque-slip characteristic. Loss components and efficiency. Single-phase induction motor. Construction, working, torque-speed characteristic and speed control of separately excited DC motor. Construction and working of synchronous generators.

UNIT-V:
Electrical Installations: Components of LT Switchgear: Switch Fuse Unit (SFU), MCB, ELCB, MCCB, Types of Wires and Cables, Earthing. Types of Batteries, Important Characteristics for Batteries. Elementary calculations for energy consumption, power factor improvement.

Text-Books:

1. Basic Electrical Engineering - D.P. Kothari and I.J. Nagrath, 3rd edition 2010, Tata McGrawHill.
2. D.C. Kulshreshtha, "Basic Electrical Engineering", McGraw Hill,2009.
3. L.S. Bobrow, Fundamentals of Electrical Engineering", Oxford University Press,2011

Reference-Books:

1. Electrical and Electronics Technology, E. Hughes, 10th Edition, Pearson,2010
2. Electrical Engineering Fundamentals, Vincent Deltoro, Second Edition, Prentice Hall India,1989.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN
2200BS07: ENGINEERING CHEMISTRY

B.TECH I YEAR I I - SEMESTER   **L T P C**
                                                                       3 0 0 3

COURSE OBJECTIVES: To learn

- To bring adaptability to the concepts of chemistry and to acquire the required skills to become a perfect engineer.
- To impart the basic knowledge of atomic, molecular and electronic modifications which makes the student to understand the technology based on them.
- To acquire the knowledge of electrochemistry, corrosion and water treatment which are essential for the Engineers and in industry.
- To acquire the skills pertaining to spectroscopy and to apply them for medical and other fields.
- To impart the knowledge of stereochemistry and synthetic aspects useful for understanding reaction pathways

COURSE OUTCOMES:

The basic concepts included in this course will help the student to gain:

- The knowledge of atomic, molecular and electronic changes, band theory related to conductivity.
- To know the modern technology and interpret different problems involved in industrial utilization of water.
- The required principles and concepts of electrochemistry, corrosion to predict the behavior of a system under different variables.
- The knowledge of configurational and conformational analysis of molecules and reaction mechanisms.
- The required skills to get clear concepts on basic spectroscopy and application to medical and other fields.

UNIT - I:

Molecular structure and Theories of Bonding: Atomic and Molecular orbital's. Linear Combination of Atomic Orbital's (LCAO), molecular orbital's of diatomic molecules, molecular orbital energy level diagrams of N_2, O_2 and F_2 molecules. π molecular orbital's of butadiene and benzene.

Crystal Field Theory (CFT): Salient Features of CFT – Crystal Field Splitting of transition metal ion d- orbital's in Tetrahedral, Octahedral and square planar geometries. Band structure of solids and effect of doping on conductance.

UNIT - II:

Water and its treatment: Introduction – hardness of water – Causes of hardness - Types of hardness: temporary and permanent – expression and units of hardness – Estimation of hardness of water by complexo metric method. Potable water and its specifications. Boiler troubles: Scales and Sludge's, Priming and Foaming, Caustic Embrittlement. Steps involved in treatment of water – Disinfection of water by chlorination

and ozonization. Boiler feed water and its treatment – Calgon conditioning, Phosphate conditioning and Colloidal conditioning. External treatment of water – Ion exchange process. Desalination of water – Reverse osmosis. Numerical problems.

UNIT - III:

Electrochemistry and corrosion: Electro chemical cells – electrode potential, standard electrode potential, types of electrodes – Calomel, Quinhydrone and Glass electrode. Nernst equation, Determination of pH of a solution by using quinhydrone and glass electrode. Electrochemical series and its applications. Numerical problems. Potentiometric titrations.

Electrochemical sensors: Potentiometric Sensors and voltametric sensors. Examples:analysis of Glucose and urea.

Batteries – Primary: Lithium cell, secondary batteries : Lead – acid storage battery and Lithium ion battery, Fuel cells: H_2-O_2 Fuel cell, CH_3OH-O_2 Fuel cell.

Causes and effects of corrosion – Theories of chemical and electrochemical corrosion – mechanism of electrochemical corrosion, Types of corrosion: Galvanic, water-line and pitting corrosion. Factors affecting rate of corrosion, Corrosion control methods- Cathodic protection – Sacrificial anode and impressed current cathodic methods. Surface coatings – metallic coatings – methods of application: Galavanising , Tinning , Metal Cladding, Electro-deposition, Electroless plating of Nickel.

UNIT - IV:

Stereochemistry, Reaction Mechanism and synthesis of drug molecules: Introduction to representation of 3-dimensional structures, Structural and stereoisomers, configurations, symmetry and chirality. Enantiomers, diastereomers, optical activity and Absolute configuration. Conformation analysis of n- butane.

Substitution reactions: Nucleophilic substitution reactions: Mechanism of SN^1, SN^2 reactions.

Electrophilic and nucleophilic addition reactions: Addition of HBr to propene. Markownikoff and anti Markownikoff's additions. Grignard additions on carbonyl compounds. Elimination reactions: Dehydro halogenation of alkylhalides, Saytzeff rule. Oxidation reactions: Oxidation of alcohols using $KMnO_4$ and chromic acid. Reduction reactions: Reduction of carbonyl compounds using $LiAlH_4$ & $NaBH_4$.Hydroboration of olefins. Structure, synthesis and pharmaceutical applications of Paracetamol and Aspirin.

UNIT – V

Spectroscopic techniques and applications: Principles of electronic spectroscopy: Beer Lamberts law, Numerical problems, types of electronic excitations , applications of UV –Visible spectroscopy. IR Spectroscopy: Principle, Modes of vibrations, selection rules, Force Constant ,Some common organic functional groups Wave number regions (C-H, NH_2, OH, -COOH, C=O, C≡ N, C=C, C≡ C), Applications of IR Spectroscopy, ^{1}H-NMR(NMR Spectroscopy), Principles of NMR spectroscopy, chemical shift, Chemical shifts of some organic protons , Introduction to Magnetic resonance imaging.

Suggested Text Books:

2. Physical Chemistry, by P.W. Atkins
3. Engineering Chemistry by P.C.Jain & M.Jain; Dhanpat Rai Publishing Company (P)Ltd., New Delhi.
4. Fundamentals of Molecular Spectroscopy, by C.N. Banwell

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

2202ES61: BASIC ELECTRICAL ENGINEERING LAB

B.TECH I YEAR II SEMESTER   **L T P C**
                                                                                             0 0 2 1

Course Objectives:
1. To analyze a given network by applying various electrical laws and network theorems
2. To know the response of electrical circuits for different excitations
3. To calculate, measure and know the relation between basic electrical parameters.
4. To analyze the performance characteristics of DC and AC electrical machines

Course Outcomes:
   After learning the lab course the student will be able to
1. Get an exposure to basic electrical laws.
2. Understand the response of different types of electrical circuits to different excitations.
3. Understand the measurement, calculation and relation between the basic electrical parameters
4. Understand the basic characteristics of transformers and electrical machines.

List of experiments/demonstrations

1. Verification of Ohms Law

2. Verification of KVL and KCL

3. Transient Response of Series RL and RC circuits using DC excitation

4. Transient Response of RLC Series circuit using DC excitation

5. Resonance in series RLC circuit

6. Calculations and Verification of Impedance and Current of RL, RC and RLC series circuits

7. Measurement of Voltage, Current and Real Power in primary and Secondary Circuits of a Single Phase Transformer

8. Load Test on Single Phase Transformer (Calculate Efficiency and Regulation)

9. Three Phase Transformer: Verification of Relationship between Voltages and Currents (Star- Delta, Delta-Delta, Delta-star, Star-Star)

10. Measurement of Active and Reactive Power in a balanced Three-phase circuit

11. Performance Characteristics of a Separately/Self Excited DC Shunt/Compound Motor

12. Torque-Speed Characteristics of a Separately/Self Excited DC Shunt/Compound Motor

13. Performance Characteristics of a Three-phase Induction Motor

14. Torque-Speed Characteristics of a Three-phase Induction Motor

15. No-Load Characteristics of a Three-phase Alternator

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

2200BS62: ENGINEERING CHEMISTRY LAB

B.TECH I YEAR II SEMESTER   **L T P C**
                                                                             0 0 2 1

COURSE OBJECTIVES:

The course consists of experiments related to the principles of chemistry required for engineering student. The student will learn:

- Estimation of hardness and chloride content in water to check its suitability for drinking purpose.
- To determine the rate constant of reactions from concentrations as an function of time.
- The measurement of physical properties like adsorption and viscosity.
- To synthesize the drug molecules and check the purity of organic molecules by thin layer chromatographic (TLC) technique.

COURSE OUTCOMES:

1) Ability to perform experiments illustrating the principles of chemistry relevant to the study of science and engineering.
2) To record the amount of hardness and chloride content in water and interpret the significance of its presence in water.
3) Understand the kinetics of a reaction from a change in concentration of reactants or products as a function of time .
4) To report and predict the significance of properties like adsorption ,conductance ,viscosity, pH and surface tension.
5) To demonstrate the technique of thin Layer Chromotograhy (TLC) and synthesise drug molecules widely used in industry.

List of Experiments

1. Determination of total hardness of water by complexometric method using EDTA
2. Determination of chloride content of water by Argentometry
3. Estimation of an HCl by Conductometric titrations
4. Estimation of Acetic acid by Conductometric titrations
5. Estimation of HCl by Potentiometric titrations
6. Estimation of Fe^{2+} by Potentiometry using $KMnO_4$
7. Determination of rate constant of acid catalysed hydrolysis of methyl acetate
8. Synthesis of Aspirin and Paracetamol
9. Thin layer chromatography calculation of R_f values. eg ortho and para nitro phenols

10. Determination of acid value of coconut oil

11. Verification of freundlich adsorption isotherm-adsorption of acetic acid on charcoal

12. Determination of viscosity of castor oil and ground nut oil by using Ostwald's viscometer.

13. Determination of partition coefficient of acetic acid between n-butanol and water.

14. Determination of surface tension of a give liquid using stalagmometer.

References

1. Senior practical physical chemistry, B.D. Khosla, A.Gulati and V.Garg (R. Chand & Co., Delhi)

2. An introduction to practical chemistry, K.K. Sharma and D. S.Sharma (Vikas publishing, N. Delhi)

3. Vogel's text book of practical organic chemistry 5th edition

4. Text book on Experiments and calculations in Engineering chemistry – S.S. Dara.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN
2203ES61: ENGINEERING WORKSHOP

B.TECH I YEAR II SEMESTER   L T P C
                                                                     1 0 3 2.5

COURSE OBJECTIVES:

1. To Study of different hand operated power tools, uses and their demonstration.
2. To gain a good basic working knowledge required for the production of various engineering products.
3. To provide hands on experience about use of different engineering materials, tools, equipment's and processes those are common in the engineering field.
4. To develop a right attitude, team working, precision and safety at work place.
5. To study commonly used carpentry joints and to have practical exposure to various welding and joining processes.

COURSE OUTCOMES: At the end of the course, the student will be able to:

1. Study and practice on machine tools and their operations
2. Practice on manufacturing of components using workshop trades including pluming, fitting, carpentry, foundry, house wiring and welding.
3. Identify and apply suitable tools for different trades of Engineering processes including drilling, material removing, measuring, chiseling.
4. Apply basic electrical engineering knowledge for house wiring practice.
5. Study commonly used carpentry joints.

I. Carpentry
1. Cross lap joint
2. Mortise & tenon joint

II. Fitting
1. V- fitting
2. Semi - Circular Fitting

III. Tin Smithy
1. Making of Rectangular Tray
2. Making of Conical Funnel

IV. Housing wiring
1. Two points controlled by two-one way switches (parallel connection)
    2. One point controlled by two-two way switches (stair case connection)
V. Foundry
1. Single piece pattern
2. Multi-piece pattern

VI. Black Smithy
    1. Round to Square
    2. S - Hook

Trades for Demonstration:
  1. Plumbing
  2. Welding
  3. Machine Shop
  4. Metal Cutting (Water Plasma)

TEXT BOOKS:
  1. Workshop Manual, P. Kannaiah and K. L. Narayana, 3rd Edition, Scitech, 2015
  2. Elements of Workshop Technology Vol.1 & 2, S. K. Hajra Choudhury, A. K. Hajra Choudhury and Nirjhar Roy, 13th Edition, Media Promoters & Publishers Pvt. Ltd., 2010.

REFERENCE BOOKS:
     1. Workshop Manual / Venkat Reddy/ BSP
     2. Workshop Manual / K Venu Gopal / Anuradha

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

2200MC01: ENVIRONMENTAL SCIENCE

B.TECH I YEAR I SEMESTER   **L T P C**
                                                                                1 0 0 0

COURSEOBJECTIVES:
- Understandingtheimportanceofecologicalbalanceforsustainabledevelopment.
- Recognize ,the significance of natural resources, their classifications. Alternative energy for the sustainability of the environment by appropriate maintance of natural resources.
- Understand the biodiversity & type of biodiversity along with the value &conservation of biodiversity
- Categorize, the type of environmental pollution & various treatment technologies for diminution of environmental pollutants summarize the global environmental issues
- Understand the sustainable development concept & importance of green buildings ,EIA, EIS,EMP.

COURSEOUTCOMES:
- Understand the scarcity of natural resources and will be able to replace them with alternative energy resources for the sustainability of environmental society & economy
- Recognize the type of biodiversity along the values & conservation biodiversity and know about the biogeographical regions
- Categorize the types of environmental pollution & the various treatment technologies for the diminution of environmental pollutants and contaminants
- Summarize the global environmental issues to create awareness about the international conventions and protocols for extenuating global environmental issues
- Understand the importance of environmental legislation policies, sustainable development and concept of green building

UNIT-I

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

UNIT-II

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

UNIT-III

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

conservation. National Biodiversity act.

UNIT-IV

Environmental Pollution and Control Technologies: **Environmental Pollution:** Classification of pollution, **Air Pollution:** Primary and secondary pollutants, Automobile and Industrial pollution, Ambient air quality standards.**Water pollution**: Sources and typesof pollution, drinking water quality standards. **Soil Pollution:** Sources and types, Impacts of modern agriculture, degradation of soil. **Noise Pollution:** Sources and Health hazards, standards, **Solid waste:** Municipal Solid Waste management, composition and characteristics of e-Waste and its management. **Pollution control technologies:** Wastewater Treatment methods: Primary, secondary and Tertiary. Overview of air pollution control technologies, Concepts of bioremediation. **Global Environmental Issues and Global Efforts:** Climate change and impacts on human environment. Ozone depletion and Ozone depleting substances(ODS). Deforestation and desertification. International conventions / Protocols: Earth summit, Kyoto protocol, and Montréal Protocol.

UNIT-V

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

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

REFERENCEBOOKS:
1. Environmental Science :towards a sustainable future by Richard T.Wright. 2008PHL Learning Private Ltd. NewDelhi.
2. Environmental Engineering and science by Gilbert M.Masters and Wendel lP.Ela. 2008PHI Learning Pvt.Ltd.
3. Environmental Science by Daniel B.Botkin & EdwardA.Keller, Wiley INDIA edition.
4. Environmental Studies by Anubha Kaushik, 4thEdition, New age international publishers.
5. Textbook of Environmental Science and Technology-Dr.M.Anji Reddy2007, BS Publications.
6. Introduction to Environmental Science by Y.Anjaneyulu, BS. Publications.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

2200BS03: ADVANCED CALCULUS & TRANSFORM TECHNIQUES

B.TECH I YEAR II SEMESTER   **L T P C**
                                                                                                        3 1 0 4

Course Objectives: To learn

- Geometrical approach to the mean value theorems, their application to the mathematical problems and Evaluation of improper integrals using Beta and Gamma functions

- Evaluation of multiple integrals and their applications.

- The physical quantities involved in engineering field related to vector valued functions and their applications to line, surface and volume integrals.

- A periodic function by Fourier series and a non-periodic function by Fourier transform and properties.

- Properties of Laplace transforms, solving ordinary differential equations using Laplace transforms techniques. Also, Z- transform of a sequence and properties.

Course Outcomes: After learning the contents of this paper the student must be able to

- Solve the applications on mean value theorems and evaluate the improper integrals using Beta and Gamma functions

- Evaluate the multiple integrals and apply the concept to find areas, volumes.

- Find the directional derivatives, Irrotational and Solenoidal functions and angle between the surfaces. Evaluate the line, surface and volume integrals and converting them from one to another.

- Express any periodic function in terms of Sines and Cosines and express a non-periodic function as integral transform.

- Use the Laplace transform techniques for solving ODE's and sequence as Z – transforms.

UNIT-I:

Differential Calculus: Rolle's theorem (without proof), Lagrange's Mean value theorem (without proof) with their Geometrical Interpretation, Cauchy's Mean value Theorem (without proof). Definition of Improper Integral; Definition of Beta and Gamma functions, properties, relation between them.

UNIT-II:

Multiple Integrals: Evaluation of Double Integrals (Cartesian); Change of order of integration (only Cartesian form); Evaluation of Triple Integrals.Areas (by double integrals) and Volumes (by double integrals and triple integrals).

UNIT-III:

Vector Differentiation: Vector point functions and Scalar point functions. Gradient, Divergence and Curl. Directional derivatives, Scalar potential functions.

Vector Integration: Line and Surface integrals

UNIT – IV

Fourier series: Introduction, Fourier series definition, Dirichlet's conditions, Even and odd functions.

Fourier Transforms: Fourier integral theorem (without proof), Fourier sine and cosine integrals, sine and cosine transforms, properties, inverse Fourier transforms.

UNIT – V

Laplace Transforms:

Definition of Laplace transform, Laplace transform of standard functions, and properties Definition of Inverse Laplace transform ,Inverse Laplace transforms of standard functions Convolution theorem, Solution of ordinary differential equations by Laplace transforms.

Z- transforms: Z- transforms inverse z-transforms, properties .convolution theorem, solution of difference equation by z-transforms.

TEXTBOOKS:
1. B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36thEdition, 2010.
2. R. K. Jain and S.R.K. Iyengar, Advanced Engineering Mathematics, Narosa Pubishers, 4th Edition, 2014.

REFERENCES:

1. Erwin Kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley & Sons, 2006.

2. Staff, E. B. and A. D. Snider , Fundamentals of Complex Analysis , Pearson.
3. S. L. Ross, Differential Equations, 3rd Ed., Wiley India, 1984.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

2205ES02: PYTHON PROGRAMMING

B.TECH I YEAR II SEMESTER   **L T P C**
                                                                                                        3 0 0 3

Course Objectives:
This course will enable students to
- Learn Syntax and Semantics and create Functions in Python.
- Handle Strings and Files in Python.
- Understand Lists, Dictionaries and Regular expressions in Python.
- Implement Object Oriented Programming concepts in Python.
- Build GUI Programming in Python.
- ☐

Course Outcomes:
The students should be able to
- Examine Python syntax and semantics and be fluent in the use of Python flow controland functions.
- Demonstrate proficiency in handling Strings and File Systems.
- Create, run and manipulate Python Programs using core data structures like Lists, Dictionaries and use Regular Expressions.
- Interpret the concepts of Object-Oriented Programming as used in Python.
- Implement exemplary applications related to Graphical User Interface (GUI) in Python.

UNIT I
PYTHON Programming Introduction, History of Python, Python is Derived from?, Python Features, Python Applications, Why Python is Becoming Popular Now a Day?, Existing Programming Vs Python Programming, Writing Programs in Python, Top Companies Using Python, Python Programming Modes, Interactive Mode Programming, Scripting Mode Programming, Flavors in Python, Python Versions, Download & Install the Python in Windows & Linux, How to set Python Environment in the System?, Anaconda - Data Science Distributor, Downloading and Installing Anaconda, Jupyter Notebook & Spyder, Python IDE - Jupyter Notebook Environment, Python IDE – Spyder Environment, Python Identifiers(Literals), Reserved Keywords, Variables, Comments, Lines and Indentations, Quotations, Assigning Values to Variables

UNIT II
Data Types in Python, Mutable Vs Immutable, and Fundamental Data Types: int, float, complex, bool, str, Number Data Types: Decimal, Binary, Octal, Hexa Decimal & Number Conversions,

Inbuilt Functions in Python, Data Type Conversions, Priorities of Data Types in Python, Python Operators, Arithmetic Operators, Comparison (Relational) Operators, Assignment Operators, Logical Operators, Bitwise Operators, Membership Operators, Identity Operators, Slicing & Indexing, Forward Direction Slicing with +ve Step, Backward Direction Slicingwith

-ve Step, Decision Making Statements, if Statement, if-else Statement, elif Statement, Looping Statements, Why we use Loops in python?, Advantages of Loops

for Loop, Nested for Loop, Using else Statement with for Loop, while Loop, Infinite while Loop, Using else with Python while Loop, Conditional Statements, break Statement, continue Statement, Pass Statement

UNIT III

Advanced Data Types: List, Tuple, Set, Frozenset, Dictionary, Range, Bytes & Bytearray, None, List Data Structure, List indexing and splitting Updating List values, List Operations, Iterating a List, Adding Elements to the List, Removing Elements from the List, List Built-in Functions, List Built-in Methods, Tuple Data Structure, Tuple Indexing and Splitting, Tuple Operations, Tuple Inbuilt Functions, Where use Tuple, List Vs Tuple, Nesting List and Tuple, Set Data Structure, Creating a Set, Set Operations, Adding Items to the Set, Removing Items from the Set, Difference Between discard() and remove(), Union of Two Sets, Intersection of Two Sets, Difference of Two Sets, Set Comparisons, Frozenset Data Structure, Dictionary Data Structure, Creating the Dictionary, Accessing the Dictionary Values, Updating Dictionary Values, Deleting Elements Using del Keyword, Iterating Dictionary, Properties of Dictionary Keys, Built-in Dictionary Functions, Built- in Dictionary Methods, List Vs Tuple Vs Set Vs Frozenset Vs Dictionary, Range, Bytes, Bytearray & None

UNIT IV

Python Functions, Advantage of Functions in Python, Creating a Function, Function Calling, Parameters in Function, Call by Reference in Python, Types of Arguments, Required Arguments, Keyword Arguments, Default Arguments, Variable-Length Arguments, Scope of Variables, Python Built-in Functions, Python Lambda Functions, String with Functions, Strings Indexing and Splitting String Operators, Python Formatting Operator, Built-in String Functions, Python File Handling, Opening a File, Reading the File, Read Lines of the File, Looping through the File, Writing the File, Creating a New File Using with Statement with Files, File Pointer Position, Modifying File Pointer Position Renaming the File & Removing the File, Writing Python Output to the Files File Related Methods, Python Exceptions, Common Exceptions, Problem without Handling Exceptions, except Statement with no Exception, Declaring Multiple Exceptions, Finally Block, Raising Exceptions, Custom Exception,

UNIT V

Python Packages, Python Libraries, Python Modules, Collection Module, Math Module, OS Module, Random Module, Statistics Module, Sys Module, Date & Time Module, Loading the Module in our Python Code, import Statement, from-import Statement, Renaming a Module, Regular Expressions, Command Line Arguments, Object Oriented Programming (OOPs), Object-oriented vs Procedure-oriented Programming languages, Object, Class, Method,

Inheritance, Polymorphism, Data Abstraction, Encapsulation, Python Class and Objects, Creating Classes in Python, Creating an Instance of the Class, Python Constructor, Creating the, Constructor in Python, Parameterized Constructor, Non-Parameterized Constructor, In- built Class Functions, In-built Class Attributes, Python Inheritance, Python Multi-Level Inheritance, Python Multiple Inheritance, Method Overriding, Data Abstraction in Python, Graphical User Interface (GUI) Programming, Python Tkinter, Tkinter Geometry, pack() Method, grid() Method, place() Method, Tkinter Widgets

TEXT BOOK:

1. Core Python Programming, Wesley J. Chun, Second Edition, Pearson

REFERENCE BOOK:
1. Programming Languages, A.B. Tucker, R.E. Noonan, TMH.
2. Programming Languages, K. C. Louden and K A Lambert., 3rd edition, Cengage Learning.
3. Programming Language Concepts, C Ghezzi and M Jazayeri, Wiley India.
4. Programming Languages 2nd Edition Ravi Sethi Pearson.
5. Introduction to Programming Languages Arvind Kumar Bansal CRC Press.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN
2205ES62: PYTHON PROGRAMMING LAB

B.TECH I YEAR II SEMESTER   **L T P C**
                                                                    0 0 3 1.5

Course Objectives:
- Introduce core programming basics and program design with functions using Python programming language.
- To understand a range of Object-Oriented Programming, as well as in-depth data and information processing techniques.
- To understand the high-performance programs designed to strengthen the practical expertise.

Course Outcomes:
- Student able to understand the basic concepts scripting and the contributions of scripting language
- Ability to explore python especially the object oriented concepts, and the built in objects of Python.
- Ability to create practical and contemporary applications such as TCP/IP network programming, Web applications, discrete event simulations

Week 1:
1. Python program to print "Hello Python"
2. Write a program that computes and prints the result of $512 - 282/47 \cdot 48 + 5$ .It is roughly .1017
3. Ask the user to enter a number. Print out the square of the number but use the sep optional argument to print it out in a full sentence that ends in a period. Sample output is shown below.Enter a number: 5
   The square of 5 is 25.
4. Ask the user to enter a number x. Use the sep optional argument to print out x, 2x, 3x, 4x, and5x, each separated by three dashes, like below.
   Enter a number: 7
   7---14---21---28---35

Week 2:
1. Write a program that asks the user to enter three numbers (use three separate input statements). Create variables called total and average that hold the sum and average of the three numbers and print out the values of total and average.
2. A lot of cell phones have tip calculators. Write one. Ask the user for the price of the meal and the percent tip they want to leave. Then print both the tip amount and the total bill with the tip included.
3. Write a program which will find all such numbers which are divisible by 7 but are not a multiple of 5,between 2000 and 3200 (both included). The numbers obtained should be printed in a

comma-separated sequence on a single line.

Hints: Consider use range(#begin, #end) method

4. Write a program that calculates and prints the value according to the given formula: Q = Square root of [(2 * C * D)/H]

Following are the fixed values of C and H:C is 50. H is 30.D is the variable whose values should be input to your program in a comma-separated sequence, let us assume the following comma separated input sequence is given to the program: 100,150,180The output of the program

Hint:

If the output received is in decimal form, it should be rounded off to its nearest value (for example, if the output received is 26.0, it should be printed as 26)18, 22,24should be:

Week 3:

1. Write a program that asks the user to enter a length in centimeters. If the user enters a negative length, the program should tell the user that the entry is invalid. Otherwise, the program should convert the length to inches and print out the result. There are 2.54 centimeters in an inch.

2. Ask the user for a temperature. Then ask them what units, Celsius or Fahrenheit, the temperature is in. Your program should convert the temperature to the other unit. The conversions are F = 9 5 C + 32 and C = 5 9 (F − 32)

3. Ask the user to enter a temperature in Celsius. The program should print a message based on the temperature: • If the temperature is less than -273.15, print that the temperature is invalid because it is below absolute zero. • If it is exactly -273.15, print that the temperature is absolute 0. • If the temperature is between -273.15 and 0, print that the temperature is below freezing. • If it is 0, print that the temperature is at the freezing point.
• If it is between 0 and 100, print that the temperature is in the normal range. • If it is 100, print that the temperature is at the boiling point. • If it is above 100, print that the temperature is above the boiling point

4. Write a program that asks the user how many credits they have taken. If they have taken 23 or less, print that the student is a freshman. If they have taken between 24 and 53, print that they are a sophomore. The range for juniors is 54 to 83, and for seniors it is 84 and over.

Week 4:

1. A year is a leap year if it is divisible by 4, except that years divisible by 100 are not leap years unless they are also divisible by 400. Write a program that asks the user for a year and prints out whether it is a leap year or not

2. Write a multiplication game program for kids. The program should give the player ten randomly generated multiplication questions to do. After each, the program should tell them whether they got it right or wrong and what the correct answer is.

Question 1: 3 x 4 = 12

Right!

Question 2: 8 x 6 = 44

Wrong.

The answer is 48.

...

...

Question 10: 7 x 7 = 49

Right.
3. A jar of Halloween candy contains an unknown amount of candy and if you can guess exactly how much candy is in the bowl, then you win all the candy. You ask the person in charge the following: If the candy is divided evenly among 5 people, how many pieces would be left over? The answer is 2 pieces. You then ask about dividing the candy evenly among 6 people, and the amount left over is 3 pieces. Finally, you ask about dividing the candy evenly among 7 people, and the amount left over is 2 pieces. By looking at the bowl, you can tell that there are less than 200 pieces. Write a program to determine how many pieces are in the bowl

Write a program that asks the user to enter a value n, and then computes $(1+ 1 2 + 1 3 +\cdots+ 1 n)-$ ln(n). The ln function is log in the math module

Week 5:
1. A number is called a perfect number if it is equal to the sum of all of its divisors, not including the number itself. For instance, 6 is a perfect number because the divisors of 6 are 1, 2, 3, 6 and $6 = 1 + 2 + 3$. As another example, 28 is a perfect number because its divisors are 1, 2, 4, 7, 14, 28 and $28 = 1 + 2 + 4 + 7 + 14$. However, 15 is not a perfect number because its divisors are 1, 3, 5, 15 and 15 6= 1 + 3 + 5. Write a program that finds all four of the perfect numbers that are less than 10000.
2. . Ask the user to enter 10 test scores. Write a program to do the following:
      (a) Print out the highest and lowest scores.
      (b) Print out the average of the scores.
      (c) Print out the second largest score.
      (d) If any of the scores is greater than 100, then after all the scores have been entered,print a message warning the user that a value over 100 has been entered.
      (e) Drop the two lowest scores and print out the average of the rest of them
3. Write a program that computes the factorial of a number. The factorial, n!, of a number n is the product of all the integers between 1 and n, including n. For instance, $5! = 1 \cdot 2 \cdot 3 \cdot 4 \cdot 5 = 120$. [Hint: Try using a multiplicative equivalent of the summing technique.]

Week 6:
1. Write a program that asks the user for a number and then prints out the sine, cosine, and tangent of that number.
2. The Fibonacci numbers are the sequence below, where the first two numbers are 1, and each number thereafter is the sum of the two preceding numbers. Write a program that asks the user how many Fibonacci numbers to print and then prints that many.
   1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89 . . .
3. Use a for loop to print a triangle like the one below. Allow the user to specify how high the triangle should be.
```
*
**
***
****
*****
```

Week 7:
1. Use for loops to print a diamond like the one below. Allow the user to specify how highthe diamond should be.

```
*
***
*****
*******
*****
***
*
```

2. Write a program that asks the user to enter an angle between −180◦ and 180◦ . Using an expression with the modulo operator, convert the angle to its equivalent between 0 ◦ and 360◦ .

3. (a) One way to find out the last digit of a number is to mod the number by 10. Write a program that asks the user to enter a power. Then find the last digit of 2 raised to that power.

   (b) One way to find out the last two digits of a number is to mod the number by 100. Write a program that asks the user to enter a power. Then find the last two digits of 2 raised to that power.

   (c) Write a program that asks the user to enter a power and how many digits they want. Find the last that many digits of 2 raised to the power the user entered

Week 8:

1. The GCD (greatest common divisor) of two numbers is the largest number that both are divisible by. For instance, gcd(18, 42) is 6 because the largest number that both 18 and 42 are divisible by is 6. Write a program that asks the user for two numbers and computes their gcd. Shown below is a way to compute the GCD, called Euclid's Algorithm.

   • First compute the remainder of dividing the larger number by the smaller number
   • Next, replace the larger number with the smaller number and the smaller number with the remainder.

   • Repeat this process until the smaller number is 0. The GCD is the last value of thelarger number.

2. Write a program that asks the user to enter a string. The program should then print the following:

   (a) The total number of characters in the string
   (b) The string repeated 10 times
   (c) The first character of the string (remember that string indices start at 0)
   (d) The first three characters of the string
   (e) The last three characters of the string
   (f) The string backwards
   (g) The seventh character of the string if the string is long enough and a message otherwise
   (h) The string with its first and last characters removed
   (i) The string in all caps
   (j) The string with every a replaced with an e
   (k) The string with every letter replaced by a space

Week 9:

1. Write a program that asks the user to enter a string. The program should create a new string called new string from the user's string such that the second character is changed to an asterisk and three exclamation points are attached to the end of the string. Finally, print new string. Typical output is shown below: Enter your string: Qbert Q*ert!!!

2. Write a program that computes the net amount of a bank account based a transaction log from console input. The transaction log format is shown as following:
D 100 W 200 D means deposit while W means withdrawal.
Suppose the following input is supplied to the program:D 300D 300 W200D 100Then, the output should be: 500

Week 10:

1. A website requires the users to input username and password to register. Write a programto check the validity of password input by users.
Following are the criteria for checking the password:
1. At least 1 letter between [a-z]
2. At least 1 number between [0-9]
1. At least 1 letter between [A-Z]
3. At least 1 character from [$#@]
4. Minimum length of transaction password: 6
5. Maximum length of transaction password: 12
Your program should accept a sequence of comma separated passwords and will check them according to the above criteria. Passwords that match the criteria are to be printed, each separated by a comma.
Example
If the following passwords are given as input to the program:
ABd1234@1,a F1#,2w3E*,2We3345

Then, the output of the program should be:
ABd1234@1

2. Write a program that accepts sequence of lines as input and prints the lines after making all characters in the sentence capitalized
Suppose the following input is supplied to the program:
Hello world
Practice makes perfect Then, the
output should be:
HELLO WORLD
PRACTICE MAKES PERFECT

3. The goal of this exercise is to see if you can mimic the behavior of the in operator and the count and index methods using only variables, for loops, and if statements.
   (a) Without using the in operator, write a program that asks the user for a string and a letter and prints out whether the letter appears in the string.
   (b) Without using the count method, write a program that asks the user for a string and a letter and counts how many occurrences there are of the letter in the string.
   (c) Without using the index method, write a program that asks the user for a string and a letter and prints out the index of the first occurrence of the letter in the string. If the letteris not in the string, the program should say so.

TEXT BOOK:
1. Core Python Programming, Wesley J. Chun, Second Edition, Pearson

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN
2200HS61: ENGLISH LANGUAGE AND COMMUNICATION SKILLS LAB

B.TECH I YEAR II SEMESTER   **L T P C**
                                                                                         0 0 2 1

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 both in formal and informal contexts.

Course Objectives:

 ☐ To facilitate computer-assisted multi-media instruction enabling individualized and independent language learning

 ☐ To sensitize students to the nuances of English speech sounds, word accent, intonation and rhythm

 ☐ To bring about a consistent accent and intelligibility in students' pronunciation of English by providing an opportunity for practice in speaking

 ☐ To improve the fluency of students in spoken English and neutralize their mother tongue influence

 ☐ To train students to use language appropriately for public speaking and interviews

 ☐ To foster better understanding of nuances of English language through audio- visual experience and group activities

 ☐ To inculcate neutralization of accent for intelligibility

 ☐To enhance students' speaking skills with clarity and confidence which in turn enhances their employability skills

Syllabus
   English Language and Communication Skills Lab (ELCS) shall have two parts:

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

Listening Skills

 Objectives:

 1. To enable students develop their listening skills 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 recognize them and find the distinction between different sounds, to be able to mark stress and recognize 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 involve students in speaking activities in various contexts
2. To enable students express themselves fluently and appropriately in social and professional contexts

- Oral practice: Just A Minute (JAM)Sessions
- Describing objects/situations/people
- Role play – Individual/Group activities
- Group Discussion – Group activities

Exercise– I CALL Lab:
Understand: Listening Skill- Its importance – Purpose- Process- Types- Barriers of Listening.
Practice: Introduction to Phonetics – Speech Sounds – Vowels and Consonants.

ICS Lab:
Understand: Communication at Work Place- Spoken vs. Written language.
Practice: Ice-Breaking Activity and JAM Session- Situational Dialogues – Greetings – Taking Leave– Introducing Oneself and Others.

Exercises – II
CALL Lab:
Understand: Structure of Syllables – Word Stress and Rhythm– Weak Forms and Strong Forms in Context.
Practice: Basic Rules of Word Accent - Stress Shift - Weak Forms and Strong Forms in Context.

ICS Lab:
Understand: Features of Good Conversation – Non-verbal Communication.
Practice: Situational Dialogues – Role-Play- Expressions in Various Situations –Making Requests and Seeking Permissions - Telephone conversation.

Exercise - III

CALL Lab:
Understand: Intonation-Errors in Pronunciation-the Influence of Mother Tongue (MTI).
Practice: Common Indian Variants in Pronunciation – Differences in British and American Pronunciation.

ICS Lab:
Understand: Telephonic Etiquette, How to make Formal Presentations.
Practice: Formal Telephone conversation and Formal Presentations.

Exercise – IV

CALL Lab:
Understand: Consonant Clusters, Plural and Past tense Markers Practice:
Words often Misspelled – Confused/ Misused.

ICS Lab:
Understand: Public Speaking – Exposure to Structured Talks.
Practice: Making a Short Speech – Extempore.

Exercise – V

CALL Lab:
Understand: Listening for General and Specific Details.
Practice: Listening Comprehension Tests.

ICS Lab:
Understand: Group Discussion *and* Interview Skills.
Practice: Case study Group Discussions *and* Mock Interviews.
****

Minimum Requirement of infrastructural facilities for ELCS Lab:
1.   Computer Assisted Language Learning (CALL)Lab:
The Computer Assisted Language Learning Lab has to accommodate 40 students with 40 systems, with one Master Console, LAN facility and English language learning software for self- study by students.

System Requirement (Hardware component):
Computer network with LAN facility (minimum 40 systems with multimedia) with the following specifications:
> i)   Computers with Suitable Configuration
> ii)   High Fidelity Headphones

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 LCD and a projector etc.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN
(2269PC01) INTRODUCTION TO INTERNET OF THINGS

B.Tech. II Year I SEM **LTPC**
3 0 0 3

Course Objectives:
- To introduce the terminology, technology and its applications
- To introduce the concept of M2M (machine to machine) with necessary protocols
- To introduce the Python Scripting Language which is used in many IoT devices
- To introduce the Raspberry PI platform, that is widely used in IoT applications
- To introduce the implementation of web based services on IoT devices.

Course Outcomes:
- Interpret the impact and challenges posed by IoT networks leading to new architectural models.
- Compare and contrast the deployment of smart objects and the technologies to connect them to network.
- Appraise the role of IoT protocols for efficient network communication.
- Elaborate the need for Data Analytics and Security in IoT.
- Illustrate different sensor technologies for sensing real world entities and identify the applications of IoT in Industry.

UNIT - I
Introduction to Internet of Things –Definition and Characteristics of IoT, Physical Design of IoT – IoT Protocols, IoT communication models, Iot Communication APIs, IoT enabled Technologies – Wireless Sensor Networks, Cloud Computing, Big data analytics, Communication protocols, Embedded Systems, IoT Levels and Templates, Domain Specific IoTs – Home, City, Environment, Energy, Retail, Logistics, Agriculture, Industry, health and Lifestyle.

UNIT - II
IoT and M2M – Software defined networks, network function virtualization, difference between SDN and NFV for IoT. Basics of IoT System Management with NETCOZF, YANG-NETCONF, YANG, SNMP NETOPEER

UNIT - III
Introduction to Python - Language features of Python, Data types, data structures, Control of flow, functions, modules, packaging, file handling, data/time operations, classes, Exception handling. Python packages - JSON, XML, HTTP Lib, URL Lib, SMTP Lib.

UNIT - IV

IoT Physical Devices and Endpoints - Introduction to Raspberry PI - Interfaces (serial, SPI, I2C). Programming – Python program with Raspberry PI with focus of interfacing external gadgets, controlling output, reading input from pins.

UNIT - V

IoT Physical Servers and Cloud Offerings – Introduction to Cloud Storage models and communication APIs. Webserver – Web server for IoT, Cloud for IoT, Python web application framework. Designing a RESTful web API

TEXT BOOKS:

1. Internet of Things - A Hands-on Approach, Arshdeep Bahga and Vijay Madisetti,Universities Press, 2015, ISBN: 9788173719547
2. Getting Started with Raspberry Pi, Matt Richardson & Shawn Wallace, O'Reilly(SPD), 2014, ISBN: 9789350239759

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN
(2204ES01) ANALOG AND DIGITAL ELECTRONICS CIRCUITS

B.Tech. II Year I Sem   **L T P C**
                                                                        3 0 0 3

Course Objectives:
- To familiarize the student with the principle of operation, analysis and design of Junction diode, BJT and FET amplifier circuits, transistors and field effect transistors.
- To understand diode as rectifier.
- To apply principles of Boolean algebra to minimize logic expressions using minimization techniques.
- To outline the formal procedures to design the combinational and sequential circuits of desired functionality.

Course Outcomes:
Upon successful completion of this course, the student will be able to:
- Understand and analyze the different types of diodes, operation and its characteristics.
- Design and analyze the DC bias circuitry of BJT and FET.
- Perform arithmetic operations on different number systems and to apply the principles of Boolean algebra to minimize logic expressions.
- Analyze some basic components used in digital systems such as adder and subtractor, decoder, encoder, multiplexer, flip-flops, registers and counters.
- Design various combinational PLDs such as ROMs, PALs, PALs.

UNIT -I
Junction Diode: P-N Junction as a Diode, Volt- Ampere Characteristics, Temperature dependence of VI characteristics, Transition and Diffusion Capacitances, Breakdown Mechanisms in Semiconductor Diodes, Zener Diode Characteristics.
Rectifiers and Filters: The P-N junction as a Rectifier, Half wave Rectifier, Full wave Rectifier, Inductor Filters, and Capacitor Filters.

UNIT –II
Bipolar Junction Transistor: The Junction Transistor, Transistor as an Amplifier, Common Base, Common Emitter and Common Collector Configurations , BJT Specifications, BJT Hybrid Model, Comparison of CB, CE, and CC Amplifier Configurations.
Transistor Biasing and Stabilization: Operating Point, The DC and AC Load lines, Need for Biasing, Bias Compensation using Diodes and Transistors, Thermal Runaway, Analysis of a Transistor Amplifier Circuit using h- Parameters,

UNIT –III

Field Effect Transistor: The Junction Field Effect Transistor, Volt-Ampere characteristics, **MOSFET:** MOSFET Characteristics in Enhancement and Depletion modes, Comparison of BJT and FET.

Digital Systems: Binary Numbers, Number base conversions, Octal, Hexadecimal and other base numbers, complements, binary codes, Error detection and correction, Basic theorems and properties of Boolean Algebra, Boolean functions, canonical and standard forms.

UNIT –IV

Gate–Level Minimization: The K-Map Method, Three-Variable Map, sum of products, product of sums simplification, Don't care conditions, NAND and NOR implementation, Exclusive-OR function.

Combinational Logic Circuits: Combinational circuit for different code converters, Binary Adder-Subtractor, Decimal Adder, Binary Multiplier, Decoders, Encoders, Multiplexers, De-multiplexers.

UNIT –V

Sequential Logic Circuits: Sequential Circuits, Latches, Flip-flops, analysis of clocked sequential circuits, Registers, Shift registers, Ripple counters, Synchronous counters.

Memory: Introduction, Random-Access memory, ROM, Programmable Logic Array, Programmable Array Logic.

TEXT BOOKS:

1. Millman's Electronic Devices and Circuits – J. Millman, C.C.Halkias, and SatyabrataJit, 2 Ed.,1998, TMH
2. Electronic Devices and Circuits – David A. Bell, 5Ed, Oxford.
3. M. Morris Mano, Michael D. Ciletti (2008), Digital Design, 4th edition, Pearson Education/PHI, India.
4. Thomas L. Floyd (2006), Digital fundamentals, 9th edition, Pearson Education International.

REFERENCE BOOKS:

1. Integrated Electronics – J. Millman and Christos C. Halkias, 1991 Ed., 2008, TMH.
2. Electronic Devices and Circuits - K. Lal Kishore, 2nd Ed.,2005,BSP.
3. Electronic Devices and Circuits – S.Salivahanan, N.Suresh Kumar, A.Vallavaraj, 2nd Ed., 2008,TMH.
4. Zvi. Kohavi (2004), Switching and Finite Automata Theory, Tata McGraw Hill, India.
5. C.V.S. Rao (2009), Switching and Logic Design, 3rd edition, Pearson Education, India.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN
(2205PC01) DATA STRUCTURES AND ALGORITHMS USING PYTHON

B.Tech. II Year I SEM   **LTPC**

3 0 0 3

Objectives:
- To impart the basic concepts of data structures and algorithms.
- To understand concepts about searching and sorting techniques
- To understand basic concepts about stacks, queues, lists trees and graphs.
- To enable them to write algorithms for solving problems with the help of fundamental data Structures

Outcomes:
At the end of the course the students are able to:
- For a given Algorithm student will able to analyze the algorithms to determine time & computation complexity and justify the correctness.
- For a given Search problem (Linear Search and Binary Search) student will able to implement it. For a given problem of Stacks, Queues and linked list student will able to implement it and analyze the same to determine the time and computation complexity.
- Student will able to write an algorithm Selection Sort, Bubble Sort, Insertion Sort, Quick Sort, Merge Sort, Heap Sort and compare their performance in term of Space and Time complexity. Student will able to implement Graph search and traversal algorithms and determine the time and computation complexity.

UNIT-I
Introduction: Basic Terminologies: Elementary Data Organizations. Data Structure Operations: insertion, deletion, traversal etc. Analysis of an Algorithm, Asymptotic Notations, Time-Space trade off. **Searching:** Linear Se arch and Binary Search Techniques and their complexity analysis.

UNIT-II
Stacks and Queues: **ADT Stack and its operations:** Algorithms and their complexity analysis, Applications of Stacks: Expression Conversion and evaluation – corresponding algorithms and complexity analysis. **ADT Queue:** Types of Queue: Simple Queue, Circular Queue, Priority Queue. Operations on each types of Queues, Algorithms and their analysis.

UNIT-III
Linked Lists: Singly linked lists: Representation in memory, Algorithms of several operations: Traversing, Searching, Insertion into, Deletion from linked list; Linked representation of Stack and Queue, Header nodes. **Doubly Linked List:** operations on it and algorithmic analysis. **Circular Linked List:** all operations their algorithms and complexity analysis.

UNIT-IV
Trees: Basic Tree Terminologies: Different types of Trees: Binary Tree, Threaded Binary Tree, Binary Search Tree, **AVL Tree:** Tree operations on each of the trees and their algorithms with complexity analysis. Applications of Binary Trees, B-Tree, B+ Tree: definitions, algorithms and analysis.

UNIT-V
Sorting and Hashing: Objective and properties of different sorting algorithms: Selection Sort, Bubble Sort, Insertion Sort, Quick Sort, Merge Sort, Heap Sort. Performance and Comparison among all the methods, Hashing.
Graph: Basic Terminologies & Representations, Graph search and traversal algorithms &complexity analysis.

TEXT BOOKS:
1. "Fundamentals of Data Structures", Illustrated Edition by Ellis Horowitz, Sartaj Sahni, Computer Science Press.

REFERENCE BOOKS:
1. Algorithms, Data Structures, and Problem Solving with C++", Illustrated Edition by Mark Allen Weiss, Addison-Wesley Publishing Company
2. "How to Solve it by Computer", 2nd Impression by R. G. Dromey, Pearson Education.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN
(2205PC03) DISCRETE MATHEMATICS

B.Tech. II Year I Sem   **L T P C**
                                                                       3 0 0 3

Course Objectives:
- Use mathematically correct terminology and notation.
- Construct correct direct and indirect proofs.
- Use division into cases in a proof.
- Use counterexamples.
- Apply logical reasoning to solve a variety of problems.

Course Outcomes:
At the end of the course the students are able to:
- For a given logic sentence express it in terms of predicates, quantifiers, and logical connectives
- For a given a problem, derive the solution using deductive logic and prove the solution based on logical inference
- For a given a mathematical problem, classify its algebraic structure Evaluate Boolean functions and simplify expressions using the properties of Boolean algebra Develop the given problem as graph networks and solve with techniques of graph theory.

UNIT-I
Propositional Logic: Syntax, Semantics, Validity and Satisfiability, Basic Connectives and Truth Tables, Logical Equivalence: The Laws of Logic, Logical Implication, Rules of Inference, Normal Forms, Disjunctive and Conjunctive Normal Form, The use of Quantifiers.
UNIT-II
Sets, Relation and Function: Operations and Laws of Sets, Cartesian Products, Binary Relation, Partial Ordering Relation, Equivalence Relation, Image of a Set, Sum and Product of Functions, Bijective functions, Inverse and Composite Function, Size of a Set, Finite and infinite Sets, Countable and uncountable Sets.
Mathematical Induction: The Well-Ordering Principle, Recursive definition, The Division algorithm: Prime Numbers,
UNIT-III
Algebraic Structures and Morphism: Algebraic Structures with one Binary Operation, Semi Groups, Monoids, Groups, Abelian Group, Free and Cyclic Monoids and Groups, Permutation Groups, Substructures, Normal Subgroups,
Algebraic Structures with two Binary Operation, Rings, Boolean Algebra and Boolean Ring, Identities of Boolean Algebra, Duality, Representation of Boolean Function.

UNIT-IV
Elementary Combinatorics: Basic counting techniques-inclusion and exclusion, pigeon-hole principle, permutations and combinations With Repetition and Without Repetition.

UNIT-V
Graphs and Trees: Graphs and their properties, Degree, Connectivity, Path, Cycle, Sub Graph, Isomorphism, Eulerian and Hamiltonian Walks, Graph Colouring, Colouring maps and Planar Graphs, Colouring Vertices, Colouring Edges, List Colouring, Perfect Graph, definition properties and Example, rooted trees, trees and sorting, weighted trees and prefix codes, Bi- connected component and Articulation Points, Shortest distances.

TEXT BOOKS:
1. Kenneth H. Rosen, Discrete Mathematics and its Applications, Tata McGraw –Hill
2. Susanna S. Epp, Discrete Mathematics with Applications, 4th edition, Wadsworth Publishing Co. Inc.
3. C L Liu and D P Mohapatra, Elements of Discrete Mathematics AComputer Oriented Approach, 3rd Edition by, Tata McGraw –Hill.

REFERENCE BOOKS:
1. J.P. Tremblay and R. Manohar, "Discrete Mathematical Structure and It's Application to Computer Science", TMG Edition, Tata McGraw-Hill
2. Norman L. Biggs, Discrete Mathematics, 2nd Edition, Oxford UniversityPress. Schaum's Outlines Series, Seymour Lipschutz, MarcLipson,
3. Discrete Mathematics, Tata McGraw –Hill

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN
(2205PC11)COMPUTER NETWORKS

B.Tech. II Year I Sem LTP C

3 0 0 3

Course Objectives:
- To introduce the fundamental various types of computer networks.
- To demonstrate the TCP/IP and OSI models with merits and demerits.
- To explore the various layers of OSI Model.
- To introduce UDP and TCP Models.
- To introduce Encryption Security Mechanism

Course Outcomes:
- Students should be understand and explore the basics of Computer Networks and various Protocols. He/She will be in a position to understand the World Wide Web concepts.
- Students will be in a position to administrate a network and flow of information further he/she can understand easily the concepts of network security, Mobile and adhoc networks.

UNIT – I
Data Communications: Components – Direction of Data flow – Networks – Components and Categories – Types of Connections – Topologies –Protocols and Standards – ISO / OSI model, Physical layer: Transmission modes, Multiplexing, Transmission Media, Switching, Circuit Switched Networks, Datagram Networks, Virtual Circuit Networks.

UNIT – II
Data link layer: Introduction, Framing, and Error – Detection and Correction – Parity – LRC– CRC Hamming code, Flow and Error Control, Noiseless Channels, Noisy Channels, HDLC, Point to Point Protocols. 111 Medium Access sub layer: ALOHA, CSMA/CD, LAN– Ethernet IEEE 802.3, IEEE 802.5 – IEEE 802.11, Random access, Controlled access

UNIT – III
Network layer: Logical Addressing, Internetworking, Tunneling, Address mapping, ICMP,IGMP, Forwarding, Uni-Cast Routing Protocols, Multicast Routing Protocols.

UNIT – IV
Transport Layer: Process to Process Delivery, UDP and TCP protocols, 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, **Security – PGP - SSH**

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

REFERENCES:
1. Data communications and Computer Networks, P.C .Gupta, PHI.
2. An Engineering Approach to Computer Networks, S. Keshav, 2nd Edition, Pearson Education.
3. Understanding communications and Networks, 3rd Edition, W.A. Shay, Cengage Learning.
4. Computer Networking: A Top-Down Approach Featuring the Internet. James F. Kurose & Keith W. Ross, 3 rd Edition, Pearson Education.
5. Data and Computer Communication, William Stallings, Sixth Edition, Pearson Education, 2000

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN
(2005PC61) DATA STRUCTURES & ALGORITHMS USING PYTHON LAB

B.Tech. II Year I Sem **LT P C**
0 0 3 1.5

Course Objectives:
- To make the student learn a object oriented way of solving problems.
- To make the student write ADTS for all data structures.

Course Outcomes:

At the end of the course the students are able to:
- For a given algorithm student will able to analyze the algorithms to determine time & computation complexity and justify the correctness.
- For a given Search problem (Linear Search and Binary Search) student will able to implement it.
- For a given problem of Stacks, Queues and linked list student will able to implement it and analyze the same to determine the time and computation complexity.
- Student will able to write an algorithm Selection Sort, Bubble Sort, Insertion Sort, Quick Sort, Merge Sort, Heap Sort and compare their performance in term of Space and Time complexity.

Week1: Write C programs to implement recursive and non recursive
i) Linear search ii) Binary Search.

Week2: Write C programs to implement
i) Bubble sort ii) Selection sort
iii) Quick sort iv) Insertion sort

Week3: Write C programs to implement the following using an array.
  a) Stack ADT b) Queue ADT

Week4: Write C programs to implement list ADT to perform following operations
a) Insert an element into a list. b) Delete an element from list
c) Search for a key element in list d) count number of nodes in list.

Week5: Write C programs to implement the following using a singly linked list.
a) Stack ADT b) Queue ADT.

Week6: Write C programs to implement the Deque (double ended queue) ADT using a doubly linked list and an array.

Week7: Write a C program to perform the following operations:
a) Insert an element into a binary search tree.
b) Delete an element from a binary search tree.
c) Search for a key element in a binary search tree.

Week 8: Write C programs for implementing the following sorting methods:
a) Merge sort   b) Heap sort

Week 9: Write C programs that use recursive functions to traverse the given binary tree in a)Preorder b) inorder and c) postorder.

Week 10: Write a C program to perform the following operations
a) Insertion into a B-tree
b) Deletion from a B-tree

Week 11: Write a C program to perform the following operation
a) Insertion into an AVL-tree

Week 12: Write a C program to implement all the functions of a dictionary (ADT) using hashing.

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

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN
(2205PC66) COMPUTER NETWORKS LAB

B.Tech. II Year I Sem   **L T P C**

                                                             0 0 3 1.5

Course Objectives:
- ✓ To understand the functionalities of various layers of OSI model
- ✓ To understand the operating System functionalities

Course Outcomes:
- ✓ Ability to understand the encryption and decryption concepts in Linux environment
- ✓ Ability to understand the mechanism of Noiseless channel.
- ✓ Ability to apply appropriate algorithm for the finding of shortest route.
- ✓ Ability to configure the routing table and Routing protocol

System/ Software Requirement
Intel based desktop PCs LAN CONNECTED with minimum of 166 MHZ or faster processor with at least 64 MB RAM and 100 MB free disk space

Computer Networks Lab:
1. Implement the data link layer framing methods such as character, character stuffing, and bit stuffing.
2. Implement on a data set of characters the three CRC polynomials – CRC 12, CRC 16 and CRC.
3. Implement Stop and wait protocol.
4. Implement Dijkstra's algorithm to compute the Shortest path through a graph.
5. Take an example subnet graph with weights indicating delay between nodes. Now obtain Routing table art each node using distance vector routing algorithm
6. To implement Open Shortest Path First (OSPF) Routing Protocol
7. Take a 64 bit playing text and encrypt the same using DES algorithm
8. Using RSA algorithm encrypts a text data and Decrypt the same.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN
(2200MC03) HUMAN VALUES AND PROFESSIONAL ETHICS

B.Tech. II Year I Sem   **LTPC**
                                                          2 0 0 0

Course Objective:
To enable the students to imbibe and internalize the Values and Ethical Behaviour in the personal and Professional lives.

Course Outcome:
The students will understand the importance of Values and Ethics in their personal lives and professional careers. The students will learn the rights and responsibilities as an employee, team member and a global citizen.

UNIT - I:
Introduction to Human Values: Need, basic Guidelines, Content and Process for Value Education, Self Exploration - 'Natural Acceptance' and Experiential Validation. Continuous Happiness and Prosperity - A look at basic Human Aspirations. Right understanding, Relationship and Physical Facilities. Understanding Happiness and Prosperity correctly

UNIT - II:
Understanding Harmony in the Family and Society: Harmony in Human - Human Relationship: Understanding harmony in the Family the basic unit of human interaction. Understanding values in human - human relationship; meaning of Nyaya and program for its fulfillment to ensure Ubhay-tripti; Trust (Vishwas) and Respect (Samman) as the foundational values of relationship. Understanding the harmony in the society (society being an extension of family). Visualizing a universal harmonious order in society - Undivided Society (AkhandSamaj), Universal Order (SarvabhaumVyawastha) - from family to worldfamily!

UNIT – III:
Introduction to Professional Ethics: Basic Concepts, Governing Ethics, Personal & Professional Ethics, Ethical Dilemmas, Life Skills, Emotional Intelligence, Thoughts of Ethics, Value Education, Dimensions of Ethics, Profession and professionalism, Professional Associations, Professional Risks, Professional Accountabilities, Professional Success, Ethics and Profession.

UNIT – IV:
Professional Practices in Engineering: Work Place Rights & Responsibilities, Professions and Norms of Professional Conduct, Norms of Professional Conduct vs. Profession; Responsibilities, Obligations and Moral Values in Professional Ethics, Professional codes of

ethics, the limits of predictability and responsibilities of the engineering profession. Central Responsibilities of Engineers – The Centrality of Responsibilities of Professional Ethics; lessons from 1979 American Airlines DC-10 Crash and Kansas City Hyatt Regency Walk away Collapse.

UNIT – V:

Global issues in Professional Ethics: Introduction – Current Scenario, Technology Globalization of MNCs, International Trade, World Summits, Issues, Business Ethics and Corporate Governance, Sustainable Development Ecosystem, Energy Concerns, Ozone Depletion, Pollution, Ethics in Manufacturing and Marketing, Media Ethics, War Ethics, Bio Ethics, Intellectual Property Rights.

TEXT BOOKS:
1. R. R. Gaur, R Sangal, G P Bagaria, 2009, A Foundation Course in Human Values and Professional Ethics.
2. Professional Ethics: R. Subramanian, Oxford University Press,2015.
3. Ethics in Engineering Practice & Research, Caroline Whitbeck, 2e,Cambridge University Press2015.

REFERENCE BOOKS:
1. Prof. K. V. Subba Raju, 2013, Success Secrets for Engineering Students, Smart Student Publications, 3rdEdition.
2. Ivan IIlich, 1974, Energy & Equity, The Trinity Press, Worcester, and HarperCollins, USA
3. Engineering Ethics, Concepts Cases: Charles E Harris Jr., Michael S Pritchard, Michael J Rabins, 4e, Cengage learning,2015.
4. Business Ethics concepts & Cases: Manuel G Velasquez, 6e, PHI,2008.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN
(2200BS04) PROBABILITY AND STATISTICS

B.Tech. II Year II Sem   **L TP C**
                                                                      3 1 0 4

Course Objectives:

- Understand a random variable that describes randomness or an uncertainty in certain realistic situation. It can be of either discrete or continuous type.
- 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.
- Most of the random situations are described as functions of many single random variables.
- The types of sampling, Sampling distribution of means, Sampling distribution of variance, Estimations of statistical parameters, Testing of hypothesis of few unknown statistical parameters.

Course Outcomes:

- Students would be able to identify distribution in certain realistic situation. It is mainly useful for circuits as well as non-circuit branches of engineering. Also able to differentiate among many random variables involved in the probability models. It is quite useful for all branches of engineering.
- 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.

UNIT – I

Probability and Discrete Probability Distributions:

Probability Definition, conditional probability, Bayer's theorem (without proof) ; Discrete Random variables ,Binomial and Poisson distributions and their properties. (Without proof)

UNIT – II

Continuous Probability Distributions: Continuous random variables and their properties (without proof), distribution functions, Normal distribution.

Curve Fitting: Curve fitting by the method of least squares- fitting of straight lines, second degree parabolas and exponential curves.

UNIT – III

Sampling Distribution: Definitions of population, sample, statistic, parameter. Types of sampling, Expected values of Sample mean and variance, sampling distribution, Standard error, Sampling distribution of mean and sampling distribution of variance.

UNIT – IV

Testing of hypothesis: Null hypothesis, Alternate hypothesis, type I, & type II errors - critical region, confidence interval, Level of significance, one tailed test and two tailed test. **Large sample tests:**

i. TestofEqualityofmeansoftwosamplesequalityofsamplemeanandpopulationmean(cases of known variance & unknown variance, equal and unequal variances)

ii. Tests of significance difference between sample proportion and population proportion & difference between two sample proportions.

UNIT – V

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.

TEXT BOOKS:

1. Higher Engineering Mathematics by Dr. B.S Grewal, KhannaPublishers
2. Probability and Statistics for Engineers and Scientists by Sheldon M.Ross, Academic Press

REFERENCE BOOKS:

1. Mathematics for Engineers by K.B.Datta and M.S.Sriniva, Cengage Publications
2. Probability and Statistics by T.K.V.lyengar & B.Krishna GandhiEt
3. Fundamentals of Mathematical Statistics by S C Gupta and V.K.Kapoor
4. O.neil by P&S only applications
5. Veerajan T., Engineering Mathematics (for semester III) , Tata McGraw-Hill, New Delhi,2010. Erwin Kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley & Sons, 2006.
6. P.G. Hoel, S.C.Port and C.J. Stone, Introduction to Probability theory, Universal Book Stall, 2003(Reprint).

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN
(2200HS03)MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS

B.Tech. II Year II Sem   **LTPC**
                                                                   3 0 0 3

Course Objectives:
To enable the student to understand and appreciate, with a particular insight, the importance of certain basic issues governing the business operations namely; demand and supply, production function, cost analysis, markets, forms of business organizations, capital budgeting, financial accounting and financial analysis.

Course Outcomes:
At the end of the course, the student will understand the market dynamics namely, demand and supply, demand forecasting, elasticity of demand and supply, pricing methods and pricing in different market structures, gain an insight into how production function is carried out to achieve least cost combination of inputs and cost analysis, develop an understanding of how capital budgeting decisions are carried out, understanding the framework for both manual and computerized accounting process, know how to analyze and interpret the financial statements through ratio analysis.

UNIT I
Introduction & Demand Analysis: 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.

UNIT II
Production & Cost Analysis: Production Function - MRTS, Least Cost Combination of Inputs, Laws of Returns, Internal and External Economies of Scale. Cost Analysis: Cost concepts. Break-even Analysis (BEA)-Determination of Break-Even Point (simple problems) –Managerial Significance.

UNIT III
Markets & New Economic Environment: Types of competition and Markets, Features of Perfect competition, Monopoly and Monopolistic Competition. Pricing: Objectives and Policies of Pricing. Methods of Pricing. Business: Features and evaluation of different forms ofBusiness Organization: Sole Proprietorship, Partnership, Joint Stock Company, Public Enterprises and their types, New Economic Environment: Changing Business Environment in Post-liberalization scenario.

UNIT IV
Capital Budgeting: Capital and its significance, Types of Capital, Estimation of Fixed and Working capital requirements, Methods and sources of raising capital - Capital Budget, Cash Budget. Capital Budgeting: features of capital budgeting proposals, Methods of Capital Budgeting: Payback Method, Accounting Rate of return (ARR) and Net Present Value Method (simple problems).

UNIT V
Introduction to Financial Accounting & Financial Analysis: Accounting concepts and Conventions - Double-Entry Book Keeping, Journal, Ledger, Trial Balance - Final Accounts (Trading Account, Profit and Loss Account and Balance Sheet with simple adjustments). Financial Analysis: Analysis and Interpretation of Liquidity Ratios, Activity Ratios, and Capital structure Ratios and Profitability ratios.

TEXT BOOKS:
1. Varshney &Maheswari: Managerial Economics, Sultan Chand,2009.
2. S.A. Siddiqui & A.S. Siddiqui, Managerial Economics and Financial Analysis, New Age international Publishers, Hyderabad2013.
3. M. Kasi Reddy & Saraswathi, Managerial Economics and Financial Analysis, PHI New Delhi,2012.

REFERENCES:
1. Ambrish Gupta, Financial Accounting for Management, Pearson Education, New Delhi,2012.
2. H. Craig Peterson & W. Cris Lewis, Managerial Economics, Pearson,2012.
3. Lipsey &Chrystel, Economics, Oxford University Press,2012.
4. Domnick Salvatore: Managerial Economics In a Global Economy, Thomson,2012.
5. Narayanaswamy: Financial Accounting - A Managerial Perspective, Pearson,2012.
6. S.N. Maheswari& S.K. Maheswari, Financial Accounting, Vikas,2012.
7. Truet and Truet: Managerial Economics: Analysis, Problems and Cases, Wiley, 2012.
8. Dwivedi: Managerial Economics, Vikas,2012.
9. Shailaja & Usha: MEFA, University Press,2012.
10. Aryasri: Managerial Economics and Financial Analysis, TMH,2012.
11. Vijay Kumar &Appa Rao, Managerial Economics & Financial Analysis, Cengage 2011.
12. J.V. Prabhakar Rao & P.V. Rao, Managerial Economics & Financial Analysis, Maruthi Publishers, 2011.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN
(2205PC08) DATABASE   MANAGEMENT   SYSTEMS

B.Tech. II Year II Sem   **LTPC**
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Course Objectives:
- To understand the basic concepts and the applications of database systems.
- To master the basics of SQL and construct queries using SQL.
- To understand the relational database design principles.
- To become familiar with the basic issues of transaction processing and concurrency control.
- To become familiar with database storage structures and access techniques.

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

UNIT – I:
Introduction: Database System Applications, Purpose of Database Systems, View of Data, Database Languages – DDL, DML, Relational Databases, Database Design, Database Architecture, Data Mining and Information Retrieval, Database Users and Administrators, History of Database Systems.

Introduction to Data base design: Database Design and ER diagrams, Entities, Attributes and Entity sets, Relationships and Relationship sets, Additional features of ER Model, Conceptual Design with the ER Model, Conceptual Design for Large enterprises.

UNIT – II:
Relational Model: Introduction to the Relational Model, Integrity Constraints over Relations, Enforcing Integrity constraints, Querying relational data, Logical data base Design: ER to Relational, Introduction to Views, Destroying /Altering Tables and Views.

Relational Algebra and Calculus: Preliminaries, Relational Algebra, Relational calculus– Tuple relational Calculus, Domain relational calculus.

UNIT – III:
SQL: Queries, Constraints, Triggers: Form of Basic SQL Query, UNION, INTERSECT, and EXCEPT, Nested Queries, Aggregate Operators, NULL values, Natural JOINS, Complex Integrity Constraints in SQL, Triggers and Active Data bases..

Schema Refinement and Normal Forms: Introduction to Schema Refinement, Functional Dependencies - Reasoning about FDs, Normal Forms, Properties of Decompositions, Normalization, Schema Refinement in Database Design, Other Kinds of Dependencies.

UNIT – IV: Transaction Management: Transactions, Transaction Concept, A Simple Transaction Model, Storage Structure, Transaction Atomicity and Durability, Transaction Isolation, Serializability.

Concurrency Control: Lock–Based Protocols, Multiple Granularity, Timestamp-Based Protocols, Validation-Based Protocols.

Recovery System-Failure Classification, Recovery and Atomicity, Recovery Algorithm, Buffer Management, Failure with loss of nonvolatile storage, Remote Backup systems.

UNIT – V: Storage and Indexing: Overview of Storage and Indexing: Data on External Storage, File Organization and Indexing, Index Data Structures, Comparison of File Organizations. Tree-Structured Indexing: Intuition for tree Indexes, Indexed Sequential Access Method (ISAM), **B+ Trees**: A Dynamic Index Structure, Search, Insert, Delete.

TEXT BOOKS:
1. Data base Management Systems, Raghu Ramakrishnan, Johannes Gehrke, McGraw Hill Education (India) Private Limited, 3rd Edition. (Part of UNIT-I, UNIT-II, UNIT-III, UNIT- V)
2. Data base System Concepts, A. Silberschatz, Henry. F. Korth, S. Sudarshan, McGraw Hill Education(India) Private Limited l, 6th edition.(Part of UNIT-I,UNIT-IV)

REFERENCE BOOKS:
- Database Systems, 6th edition, R Elmasri, Shamkant B.Navathe, Pearson Education.
- Database System Concepts, Peter Rob & Carlos Coronel, Cengage Learning.
- Introduction to Database Management, M. L. Gillenson and others, Wiley Student Edition.
- Database Development and Management, Lee Chao, Auerbach publications, Taylor& Francis Group.
- Introduction to Database Systems, C. J. Date, Pearson Education.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN
(2205PC04) OBJECT ORIENTED PROGRAMMING THROUGH JAVA

B.Tech. II Year II Sem   **LTPC**
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Course Objective:

- The objective of this course is to provide object-oriented concepts through which robust, secured and reusable software can be developed.
- To understand object-oriented principles like abstraction, encapsulation, inheritance and polymorphism and apply them in solving problems.
- To understand the principles of inheritance and polymorphism and demonstrate how they relate to the design of abstract classes.
- To understand the implementation of packages and interfaces.
- To understand the concepts of exception handling, multithreading and collection classes.
- To understand the design of Graphical User Interface using applets and swing controls.

Course Outcomes:

At the end of the course the students are able to:

- An understanding of the principles and practice of object-oriented analysis and design in the construction of robust, maintainable programs which satisfy their requirements;
- A competence to design, write, compile, test and execute straightforward programs using a high-level language;
- An appreciation of the principles of object-oriented programming;
- An awareness of the need for a professional approach to design and the importance of good documentation to the finished programs.
- Be able to implement, compile, test and run Java programs comprising more than one class, to address a particular software problem.
- Demonstrate the ability to use simple data structures like arrays in a Java program.
- Be able to make use of members of classes found in the Java API.
- Demonstrate the ability to employ various types of selection constructs in a java program. Be able to employ a hierarchy of Java classes to provide a solution to a given set of requirements.
- Able to develop applications using Applet and Swings.

UNIT-I

Object-oriented thinking- A way of viewing world – Agents and Communities, messages and methods, Responsibilities, Classes and Instances, Class Hierarchies- Inheritance, Method binding, Overriding and Exceptions, Summary of Object-Oriented concepts.

An Overview of Java -History of Java, comments, Data types, Variables, Constants, Scope and Lifetime of variables, Operators, Type conversion and casting, Enumeration, Control flow-

block scope, conditional statements, loops, break and continue statements, simple java standalone programs, arrays, console input and output, classes, methods, constructors, static,this keyword, recursion, exploring string classes and garbage collection.

UNIT – II

Inheritance–Inheritance hierarchy, super keyword, preventing inheritance: final classes and methods, the Object class and its methods**.**

Polymorphism–dynamic binding, Constructor and method overloading, method overriding, abstract classes**.**

Interfaces-Interfaces Vs Abstract Classes, defining an interface, implementing interfaces, accessing implementations through interface references, extending interface, inner class.

Packages-Defining, creating and accessing a package, CLASSPATH, Access modifiers, importing packages.

UNIT-III

Exception Handling-Dealing with errors, benefits of exception handling, the classification of exceptions - exception hierarchy, checked exceptions and unchecked exceptions, usage of try, catch, throw, throws and finally, creating own exception subclasses.

Multithreading – Differences between multiple processes and multiple threads, thread lifecycle, creating threads, interrupting threads, thread priorities, synchronizing threads, inter-thread communication-producer consumer problem.

UNIT-IV

Collection Framework in Java – Introduction to java collections, Overview of java collection framework, commonly used collection classes-ArrayList, LinkedList, HashSet, TreeSet, Map- Hash Map, Tree Map, Legacy Classes-Vector, Stack, Hashtable.

Other Utilities-Scanner, String Tokenizer, Random, Date.

Files-Streams-Byte Streams, Character Streams, Text input/output, Binary input /output , File Management using File class.

UNIT-V

Applets – Inheritance hierarchy for applets, differences between applets and applications, Life cycle of an applet and Passing parameters to applets

GUI Programming - Swing -The AWT class hierarchy, Introduction to Swing, Swing Vs AWT, Hierarchy for Swing components, Overview of Swing components – JButton, JLabel, JTextField, JCheckBox, RadioButton, JTextArea, etc simple Swing applications, Layout managers– FlowLayout, BorderLayout, GridLayout and GridbagLayout.

Event Handling-Events, Event sources, Event classes, Event Listeners, Delegation event model, Handling Mouse and Key events, Adapter classes.

TEXT BOOKS:

1. Java Fundamentals–A Comprehensive Introduction, Herbert Schildt and Dale Skrien, TMH.
2. Understanding Object-Oriented Programming with Java, updated edition, T. Budd, Pearson Education

REFERENCE BOOKS:

1. Java for Programmers, P.J.Deite land H.M.Deitel, PEA(or) Java: Howto Program , P.J.Deitel and H.M.Deitel,PHI
2. ObjectOrientedProgrammingthroughJava,P.RadhaKrishna,Universities Press.
3. Thinking in Java, BruceEckel, PE
4. Programming in Java, S.Malhotra and S.Choudhary, Oxford Universities Press.
5. Design Patterns Erich Gamma, Richard Helm, Ralph Johnson and John Vlissides

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN
(2205PC64) DATABASE MANAGEMENT SYSTEMS LAB

B.Tech. II Year II Sem   LTPC
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Course Objectives:
Students will have the ability to:
- Keep abreast of current developments to continue their own professional development.
- To engage themselves in lifelong learning of Database management systems theories and technologies this enables them to purse higher studies.
- To interact professionally with colleagues or clients located abroad and the ability to overcome challenges that arises from geographic distance, cultural differences, and multiple languages in the context of computing.
- Develop team spirit, effective work habits, and professional attitude in written and oral forms, towards the development of database applications

Course Outcomes:
Students will be able to demonstrate their skills
- In drawing the ER, EER, and UML Diagrams.
- In analyzing the business requirements and producing a viable model for the implementation of the database.
- In converting the entity-relationship diagrams into relational tables.
- To develop appropriate Databases to a given problem that integrates ethical, social, legal, and economic concerns.

A. Practice on SQL Queries to acquire knowledge on RDBMS.

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

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

The company wants to computerize its operations in the following areas:
- Reservations and Ticketing
- Cancellations

- Reservations &Cancellation:

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

Cancellations are also directly handed at the booking office.

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

The above Process involves many steps like

1. Analyzing the problem and identifying the Entities and Relationships, 2. E-R Model, 3. Relational Model 4. Normalization 5. Creating the database 6. Querying. Students are supposed to work on these steps week wise and finally create a complete "Database System" to Roadway Travels. Examples are given at every experiment for guidance to students.

Experiment 1: E-R Model

Analyze the problem carefully and come up with the entities in it using software design tool. 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:

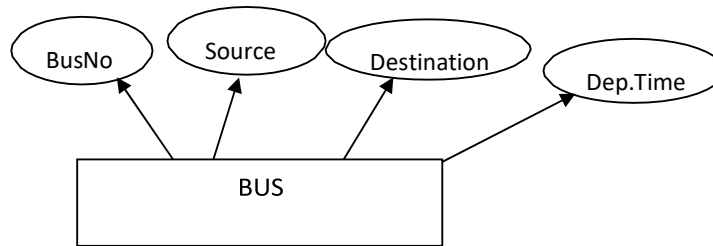## Entities:
1. BUS
2. Ticket
3. Passenger

Relationships:
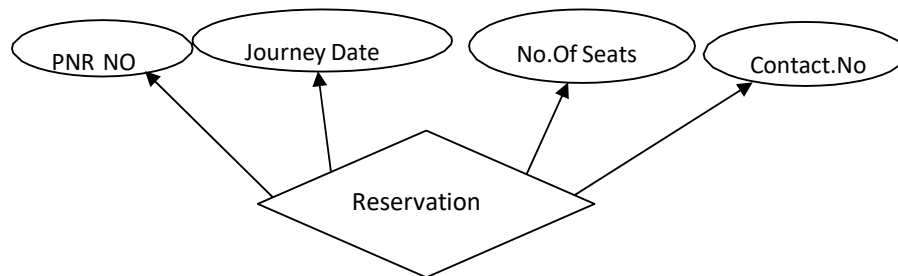1. Reservation
2. Cancellation

PRIMARY KEY ATTRIBUTES:

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

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

Ex: Bus Entity

Ex: Reservation relationship

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

Experiment 2: Installation of Mysql and practicing DDL, commands

Installationof 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,
AgeInteger 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 3: 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,'hyderabd','Kolkata'); Insert into Bus
values (45,'Tirupathi,'Banglore'); Insert into Bus
values (34,'hyderabd','Chennai');

Inserting values into "Passenger" 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 DMLcommands:
Select * from Bus; (selects all the attributes and display)
UPDATE BUS SET Bus No = 1 WHERE BUS NO=2;

Experiment 4: 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:
Display unique PNR_no of all Passengers. Display all the names of male
passengers. Display the ticket numbers and names of all the passengers.
Find the ticket numbers of the passengers whose name start with 'r' and ends with 'h'.
Find the names of passengers whose age is between 30 and 45.
Display all the passengers names beginning with 'A' Display the sorted list of passengers
names

Experiment 5: Aggregate Functions and Number Functions, Nested Query and Co-related Queries You are going to practice queries using Aggregate functions and number 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.
Display the number of days in a week on which the 9W01 bus is available.
Find number of tickets booked for each PNR_no using GROUP BY CLAUSE. Hint: Use GROUP BY on PNR_No.

Find the distinct PNR numbers that are present.

Find the number of tickets booked by a passenger where the number of seats is greater than 1.Hint: Use GROUP BY, WHERE and HAVING CLAUSES.

Find the total number of cancelled seats.

Nested Query and Co-related Queries

Use the tables sailors, reserves, boats for implementing the following Sailors (sid: integer, sname: string, rating: integer, age: real);

Boats(bid: integer, bname: string, color: string); Reserves(sid: integer, bid: integer, day: date).

- Find the names of sailors who have reserved boat103
- Find the name and the age of the youngest sailor
- Find the names and ratings of sailor whose rating is better than some sailor called Horatio
- Find the names of sailors who have reserved all boats

Experiment 6: VIEWS and JOIN

In this week, we are going to implement views and also perform various operations like alter, update and delete commands.

View:

Write a query to execute and verify the SQL commands using Views (Use Employee Table)

(a) Alter (b) Update (c) Delete

Join:

Write a query to execute and verify the SQL commands using Join (Use Customer Table)

(a) Inner join, (b).Left join, (c).Right join (d).Full join

Experiment 7: 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 up d check BEFORE UPDATE ON passenger FOR EACH ROW BEGIN

IF NEW.Tickent N0 > 60 THEN SET
New.Tickent no = Ticket no; ELSE SET
New.Ticket no = 0; END IF;
END;

Experiment 8: Procedures

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

Eg: CREATE PROCEDURE myProc()

BEGIN
SELECT COUNT(Tickets) FROM Ticket WHERE age>=40; End;

Experiment 9: 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_nameVARCHAR(30);
DECLAREclCURSORFORSELECTppno,nameFROMPassengerWHE
RE ppno=in_customer_id; OPENcl;
FETCH cl
into v_id, v_name; Close cl;
END Tables BUS
Bus No: Varchar:
PK (Primary key) Source: Varchar Destination:
Varchar DeptTime:Varchar **Passenger**
PPNO: Varchar(15)) :
PK Name:
Varchar(15) Age : int (4) Sex:Char(I 0) : Male/Female Address: VarChar(20)

Passenger_Tickets
PPNO: Varchar(15)) : FK Ticket No: Numeric (9)

Reservation
PNR_No: Numeric(9) :
PK 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

Experiment 10: 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, thepossibility exists that these instances will not be kept consistent when the data within the table is updated, leading to a loss of data integrity. A table that is sufficiently normalized is less vulnerable to problems of this kind, because its structure reflects the basic assumptions for when multipleinstances 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	PassportID

Passport_id	Ticket_id

You can do these cond and third normal forms if required. And how Normalize dtables aregiven at the end.

Experiment 11: PL/SQL Programs

In this week, you are going to learn and work on PL/SQL procedures.

- Write a PL/SQL procedure to find the average of marks?
- Write a PL/SQL procedure to find the factorial of a number?
- Write a PL/SQL code to calculate tax for an employee of an organization–XYZ and todisplay his/her name & tax, by creating table under employee database as below. Em- ployee_salary Emp_no Basic HRA DA Total_deduction

Net_salary   Gross_salary

Experiment 12: Revoke/Grant/Commit/Rollback

In this week, you need to do the following: Declare a table that defines a result set using revoke, grant, save point, commit, rollback operations

Consider the following tables namely "DEPARTMENTS" and "EMPLOYEES" Their schemas are as follows, Departments (dept _no , dept_ name , dept_location); Employees(emp_id , emp_name , emp_salary);

1. Developaquerytograntallprivilegesofemployeestableintodepartments table
2. Developaquerytograntsomeprivilegesofemployeestableintodepartments table
3. Developaquerytorevokeallprivilegesofemployeestablefromdepartments table
4. Develop a query to revoke some privileges of employees table from departments table
5. Write a query to implement the save point
6. Write a query to implement the commit
7. Write a query to implement rollback

Reference Books:
1. Introduction to SQL, RickF. 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,B lack Book, Dr.P.S.Deshpande, Dream Tech
5. Oracle Database 11g PL/ SQL Programming,M. McLaughlin,TMH
6. SQL Fundamentals, J.J.Patrick, Pearson Education

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN
(2205PC63) OBJECT ORIENTED PROGRAMMING THROUGH JAVA LAB

B.Tech. II Year II Sem   **LTPC**
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Course Objectives:

- To prepare students to become familiar with the Standard Java technologies of J2SE
- To prepare students to excel in Object Oriented programming and to succeed as a Java Developer through global rigorous education.
- To provide Students with a solid foundation in OOP fundamentals required to solve programming problems and also to learn Advanced Java topics like J2ME, J2EE, JSP and JavaScript
- To train Students with good OOP programming breadth so as to comprehend, analyze, design and create novel products and solutions for the real life problems.
- To inculcate in students professional and ethical attitude, multidisciplinary approach and an ability to relate java programming issues to broader application context.
- To provide student with an academic environment aware of excellence, written ethical codes and guidelines and lifelong learning needed for a successful professional career.

Course Outcomes:

- Able to analyze the necessity for Object Oriented Programming paradigm and over structured programming and become familiar with the fundamental concepts in OOP.
- Demonstrate an ability to design and develop java programs, analyze, and interpret object oriented data and report results.
- Demonstrate an ability to design an object oriented system, Swing components or multi-threaded process as per needs and specifications.
- Demonstrate an ability to visualize and work on laboratory and multidisciplinary tasks like console and windows applications both for standalone and Applets program

Week 1: a) Write a java program to find the Fibonacci series using recursive and non recursive functions.
       a) Write a java program to multiply two given matrices.

Week 2: a) Write a java program for Method overloading and Constructor overloading.
       b) Write a java program to display the employee details using Scanner class.
       c) Write a java program that checks whether a given string is palindrome or not.

Week 3: a) Write a java program to represent Abstract class with example.
       b) Write a java program to implement Interface using extends keyword.

Week 4: a) Write a java program to create user defined package.

Week 5: a) Write a java program to create inner classes.

      b) Write a java program for creating multiple catch blocks.

      c) Write a Java Program for creating User Defined Exception.

Week 6: a) Write a java program for producer and consumer problem using Threads.

      b)Write a Java program that implements a multi-thread application that has three threads.

Week 7: a) Write a java program to implement all file operations.

      b) Write a Java Program to list all the files in a directory including the files present in all its sub directories.

Week 8: a) Write a java program to represent ArrayList class.

      b) Write a Java program loads phone no, name from a text file using Hashtable.

Week 9: a) Write an applet program that displays a simple message. b)Write a Java programcompute factorial value using Applet.

      c)Write a program for passing parameters using Applet.

Week 10: Write a java program for handling Mouse events and Key events

Week 11: Write a java program that works as a simple calculator. Use a Grid Layout arrangeButtons for digits and for the + - * % operations. Add a text field to display the result.

MALLA REDDY ENGINEERING COLLEGE FORWOMEN
(2000MC04) INDIAN CONSTITUTION

B.Tech. II Year II Sem   **LTPC**
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Course Objective:
- To enable the students to be aware of emergence and evolution of Indian Constitution, to understand their fundamental rights and duties and to understand the structure and composition of Election Commission.

Course Outcome:
- Students will be able to understand and discuss about Indian constitution. The students will learn their Rights and Responsibilities as an Indian citizen.

UNIT –I
Meaning and Importance of Constitution, Evolution of the constitution of India. Salient features of the constitution of India

UNIT –II
Scheme of fundamental rights, fundamental duties and its legal status. The Directive Principlesof State Policy- Significance and implementation

UNIT –III
Government of the Union : President of India – Election and Powers, Prime Minister and Council of Ministers, Lok Sabha – Composition and Powers, Rajya Sabha – Composition and Powers

UNIT –IV
The historical perspectives of the constitutional amendments in India. Emergency provisions: National Emergency, President Rule, Financial Emergency, Local self-government- Constitutional scheme in India

UNIT –V
Election Commission: Role and Functioning, Chief Election Commissioner and Election Commissioners, State Election Commission: Role and Functioning, Institute and Bodies for thewelfare of SC/ST/OBC and women.

TEXTBOOKS:
1. The Constitution of India, 1950 (Bare Act), Government Publication.
2. M. P. Jain, Indian Constitution Law, 7th Edition, Lexis Nexis, 2014.

REFERENCES:
1. D.D. Basu, Introduction to the Constitution of India, Lexis Nexis, 2015
2. 'Indian Administration' by Avasti and Avasti

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN
(2205PC10) Design and Analysis of Algorithms

B.Tech. II Year II Sem   **LTPC**
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Course Objectives:
- To analyze performance of algorithms.
- To choose the appropriate data structure and algorithm design method for a specifiedapplication.
- To understand how the choice of data structures and algorithm design methods impacts theperformance of programs.
- To solve problems using algorithm design methods such as the greedy method, divide andconquer, dynamic programming, backtracking and branch and bound.
- Prerequisites (Subjects) Data structures, Mathematical foundations of computer science.

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

UNIT - I
Introduction-Algorithm definition, Algorithm Specification, Performance Analysis-Spacecomplexity, Time complexity, probabilistic analysis Randomized Algorithms.
Divide and conquer- General method, applications - Binary search, Merge sort, Quick sort, Strassen's Matrix Multiplication.

UNIT - II
Disjoint set operations- union and find algorithms, Efficient non-recursive binary tree traversal algorithms, spanning trees, graph traversals- BFS and DFS, AND/OR graphs, GameTree, Connected Components and Spanning trees, Bi-connected components

UNIT - III
Greedy method- General method, applications- Knapsack problem, Job sequencing with deadlines, Minimum cost spanning trees, Single source shortest path problem.
Dynamic Programming- General Method, applications- All pairs shortest path problem, Optimal binary search trees, 0/1 knapsack problem, Reliability design, Traveling sales personproblem.

UNIT - IV
Backtracking-General method, applications-The 8-queen problem, sum of subsets problem,graph coloring, Hamiltonian cycles.
Branch and Bound- General Method, applications-0/1 Knapsack problem, LC Branch and Bound solution, traveling sales person problem.

UNIT - V
NP- Hard and NP-Complete problems- Basic concepts, Non-deterministic algorithms, NP- Hard and NP- Complete classes, Cook's theorem.

TEXT BOOKS:

1. Fundamentals of Computer Algorithms, 2nd Edition, Ellis Horowitz,
SartajSahniand S.Raja sekharan, Universities Press.
2. Design and Analysis of Algorithms, P. H. Dave, H. B. Dave, 2ndedition,
PearsonEducation.

REFERENCE BOOKS:

1. Algorithm Design: Foundations, Analysis and Internet examples, M. T. Goodrich and
R. Tomassia, John Wiley andsons.
2. Design and Analysis of Algorithms, S. Sridhar, Oxford Univ. Press
3. Design and Analysis of algorithms, Aho, Ullman and Hopcroft, Pearson Education.
4. Foundations of Algorithms,, R. Neapolitan and K. Naimipour, 4thedition,
Jones andBartlett Student edition.
5. Introduction to Algorithms, 3rdEdition, T. H. Cormen, C. E. Leiserson, R. L. Rivest, and
C. Stein, PHI