BACHELOR OF TECHNOLOGY

Computer Science and Engineering

(AI & ML)

COURSE STRUCTURE

(Batches admitted from the Academic Year 2024 -2025)

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(Autonomous Institution-UGC, Govt. of India)

Accredited by NAAC with 'A+' Grade, UGC, Govt. of India

Affiliated to JNTUH, Approved by AICTE, ISO 9001:2015 Certified Institution

Maisammaguda, Dhullapally, Secunderabad, Kompally-500100

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COURSE STRUCTURE

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

S. No	Course code	Subject	L	T	P	C	Max. Marks	
							INT	INT
1	2400BS01	Linear Algebra and Differential Equations	3	1	0	4	40	60
2	2405ES01	Programming for Problem Solving	3	0	0	3	40	60
3	2402BS05	Engineering Chemistry	3	0	0	3	40	60
4	2403ES01	Computer Aided Engineering Graphics	1	0	4	3	40	60
5	2400HS01	English for Skill Enhancement	2	0	0	2	40	60
6	2402BS61	Engineering Chemistry Lab	0	0	2	1	40	60
7	2400HS61	English Language and Communication skills Lab	0	0	3	1.5	40	60
8	2405ES61	Programming for Problem Solving Lab	0	0	5	2.5	40	60
9	24050C02	French Language/ German*	2	0	0	0	100	
		Induction Programme	-	-	-	-		
		Total	**14**	**1**	**14**	**20**	**420**	**480**

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

S. No	Course code	Subject	L	T	P	C	Max. Marks	
							INT	EXT
1	2400BS03	Numerical Techniques and Vector Calculus	3	1	0	4	40	60
2	2405ES02	Data Structures	3	0	0	3	40	60
3	2400BS01	Basic Electrical and Electronics Engineering	3	0	0	3	40	60
4	2400BS06	Applied Physics	3	1	0	4	40	60
5	2403ES61	Engineering Workshop	0	0	3	1.5	40	60
6	2400BS62	Basic Electrical and Electronics Engineering Lab	0	0	2	1	40	60
8	2405ES61	Data Structures lab	0	0	5	2.5	40	60
8	2400BS62	Applied Physics lab	0	0	1	1	40	60
9	2400MC01	Environmental Science*	2	0	0	0	100	0
		TOTAL	**14**	**2**	**11**	**20**	420	480

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

S. No	Course code	Subject	L	T	P	C	Max. Marks	
							INT	EXT
1	2405PC06	Computer Organization	3	1	0	4	40	60
2	2405PC01	Software Engineering	3	0	0	3	40	60
3	2405PC02	Operating Systems	3	0	0	3	40	60
4	2405PC03	Discrete Mathematics	3	1	0	4	40	60
5	2405PC04	Object Oriented Programming throughJava	3	0	0	3	40	60
6	2405PC61	Operating Systems Lab	0	0	3	1.5	40	60
7	2405PC63	Object Oriented Programming throughJava Lab	0	0	3	1.5	40	60
9	2400MC03	Human Values and Professional Ethics*	2	0	0	0	100	0
		TOTAL	**17**	**2**	**6**	**20**	**380**	**420**

*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	Course code	Subject	L	T	P	C	Max. Marks	
							INT	EXT
1	2400HS03	Business Economics and Financial Analysis	3	0	0	3	40	60
2	2400BS04	Probability& Statistics	3	1	0	4	40	60
3	2466PC01	Artificial Intelligence	3	0	0	3	40	60
4	2405PC07	Design and Analysis of Algorithms	3	0	0	3	40	60
5	2405PC08	Database Management Systems	3	1	0	4	40	60
6	2466PC61	Artificial Intelligence Lab	0	0	3	1.5	40	60
7	2405PC64	Database Management Systems Lab	0	0	3	1.5	40	60
8	2400MC04	Indian Constitution *	2	0	0	0	100	0
		TOTAL	**17**	**2**	**6**	**20**	**380**	**420**

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

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

S. No	Course code	Subject	L	T	P	C	Max. Marks	
							INT	EXT
1	2466PC02	Machine Learning	3	0	0	3	40	60
2	2405PC10	Computer Networks	3	0	0	3	40	60
3		**Professional Elective-1**	3	0	0	3	40	60
	2466PE01	Artificial Neural Networks						
	2412PE02	Data Warehousing & Data Mining						
	2405PE01	Object Oriented Analysis & Design						
	2462PE16	Information Security						
	2405PE02	Computer Graphics						
	2412PE01	Mobile Computing						
4		**Professional Elective – II**	3	0	0	3	40	60
	2466PE02	AI Search Method for Problem Solving						
	2412PE04	Distributed Databases						
	2405PE03	Software Testing Methodology						
	2462PE17	Digital Forensics						
	2412PE09	Multimedia						
	2405PE06	Cloud Computing						
5		**Open Elective-1**	3	0	0	3	40	60
6	2466PC62	Machine Learning Lab	0	0	3	1.5	40	60
7	2405PC66	Computer Networks Lab	0	0	3	1.5	40	60
8	2466PR01	Innovative Product Development -I	0	0	2	1	40	60
9	2466PR02	Field Project/Real Time Project	0	0	0	1	100	
10	2400MC05	Technical Communications and Soft Skills*	2	0	0	0	100	0
		TOTAL	**17**	**0**	**8**	**20**	**520**	**480**

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

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

S. No	Course code	Subject	L	T	P	C	Max. Marks	
							INT	EXT
1	2400HS02	Professional English	3	0	0	3	40	60
2	2466PC03	Data Analytics	3	0	0	3	40	60
3	2412PC01	Full Stack Development	3	0	0	3	40	60
4		**Professional Elective – III**	3	0	0	3	40	60
	2466PE03	Cognitive Computing						
	2467PE10	Data Science with R programming						
	2405PE04	Agile Software Development						
	2462PE15	Cyber Security Essentials						
	2405PE11	Image Processing						
	2412PE03	Information Retrieval System						
5		**Open Elective – II**	3	0	0	3	40	60
6	2266PC63	Data Analytics Lab	0	0	3	1.5	40	60
7	2212PC61	Full Stack Development Lab	0	0	3	1.5	40	60
8	2200HS05	Design Thinking	2	0	0	1	40	60
9	2266PR03	Innovative Product Development -II	0	0	2	1	40	60
10	2200MC06	Indian Tradition Knowledge *	2	0	0	0	100	0
		TOTAL	**19**	**1**	**8**	**20**	**460**	**540**

*Mandatory course: Non-credit course, 50% of scoring is required for the award of the degree IndustryOriented Mini Project/ Internship - During Summer Vacation-Evaluation in IV-I

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

S. No	Course code	Subject	L	T	P	C	Max. Marks	
							INT	EXT
1	2400HS04	Fundamentals of Management and Entrepreneurship	2	0	0	2	40	60
1	2466PC04	Natural Language Processing	3	0	0	3	40	60
2	2466PC05	Deep Learning	3	0	0	3	40	60
4		**Professional Elective - IV**	3	0	0	3	40	60
	2466PE04	Advanced AI For Health Care Analytics						
	2247PE11	Data Wrangling						
	2245PE08	Software Process Project Management						
	2262PE18	Cybercrime and investigation						
	2412PE10	3D Modelling Design						
	2466PE07	Computer Vision						
5		**Open Electives - III**	3	0	0	3	40	60
6	2466PC65	Deep Learning Lab	0	0	2	1	40	60
7	2466PC64	Natural Language Processing Lab	0	0	2	1	40	60
8	2466PR04	Innovative Product Development -III	0	0	2	1	40	60
9	2466PR05	Industry Oriented Mini Project / Internship/Skill Development Course	0	0	2	1	40	60
10	2466PR06	Research Project-I	0	0	4	2	40	60
11	2200MC07	Gender Sensitization*	2	0	0	0	100	0
		TOTAL	**16**	**0**	**12**	**20**	**500**	**600**

*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	Course code	Subject	L	T	P	C	Max. Marks	
							INT	EXT
1		**Professional Elective –V**	3	0	0	3	40	60
	2466PE05	Large Language Models						
	2467PE05	Healthcare Analytics						
	2405PE09	Software Quality Assurance and Testing						
	2462PE19	Database Security						
	2466PE09	Game Theory						
	2466PE11	Multimodal AI						
2		**Professional Elective –VI**	3	0	0	3	40	60
	2466PE06	Generative AI						
	2467PE14	Big Data Architecture & Spark						
	2405PE10	Secure Software Engineering						
	2462PE20	Web Security						
	2466PE10	Augmented Reality and virtual Reality						
	2412PE05	Human Computer Interaction						
3		**Open Electives-IV**	3	0	0	3	40	60
4	2466PR07	Technical Seminar	2	0	0	2	100	0
5	2466PR08	Innovation Start-up & Entrepreneurship	0	0	8	4	40	60
6	2466PR09	Research Project-II	0	0	10	5	40	60
7	2400MC08	Research Methodology & IPR	2	0	0	0	100	
		TOTAL	**11**	**0**	**18**	**20**	**400**	**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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PROFESSIONAL ELECTIVES					
Professional Elective -I		**Professional Elective -II**		**Professional Elective -III**	
2466PE01	Artificial Neural Networks	2466PE02	AI Search Method for Problem Solving	2466PE03	Cognitive Computing
2412PE02	Data Warehousing & Data Mining	2412PE04	Distributed Databases	2467PE10	DataScience with R Programming
2405PE01	Object Oriented Analysis & Design	2405PE03	Software Testing Methodology	2405PE04	Agile Software Development
2462PE16	Information Security	2462PE17	Digital Forensics	2462PE15	Cyber Security Essentials
2405PE02	Computer Graphics	2412PE09	Multimedia	2405PE11	Image Processing
2412PE01	Mobile Computing	2405PE06	Cloud Computing	2412PE03	Information Retrieval System
Professional Elective -IV		**Professional Elective -V**		**Professional Elective –VI**	
2466PE04	Advanced AI For Health Care	2466PE05	Large Language Models	2466PE06	Generative AI
2467PE11	Data Wrangling	2467PE05	Healthcare Analytics	2467PE14	Big Data Architecture & Spark
2405PE08	Software Process Project Management	2405PE09	Software Quality Assurance and Testing	2405PE10	Secure Software Engineering
2462PE18	Cybercrime and investigation	2462PE19	Database Security	2462PE20	Web Security
2412PE10	3D Modelling Design	2466PE09	Game Theory	2466PE10	Augmented Reality and virtual Reality
2466PE07	Computer Vision	2466PE11	Multimodal AI	2412PE05	Human Computer Interaction

Open Electives

Department	Open Elective-I	Open Elective-II	Open Elective-III	Open Elective-IV
CSE	1.Fundamentals of DBMS (2205OE01) 2. Automata Thery & Compiler Design(2205OE02)	1. Data Structures (2205OE03) 2. Advanced Compiler Design (2205OE04)	1.JAVA Programming (2205OE05) 2. Case tools & Software Testing (2205OE06)	1. Data & knowledge Mining (2205OE07) 2. Web Application Development (2205OE08)
IT	1. Advanced Computer Architecture(2212OE01) 2. Advanced Operating Systems(2212OE02)	1. Scripting Language (2212OE03) 2. Embedded Systems(2212OE04)	1. Advanced Computer Networks (2212OE05) 2. Advanced Algorithms (2212OE06)	1. Computational Complexity (2212OE07) 2. Robotic Process Automation (2212OE08)
AIML	1. Knowledge Representation & Reasoning(2266OE01) 2. Neural Networks(2266OE02)	1. Applied Artificial Intelligence (2266OE03) 2. Nature Inspired Computing (2266OE04)	1. Cognitive Computing & Applications (2266OE05) 2. Edge Analytics (2266OE06)	1. Deep Learning using python (2266OE07) 2. Quantum Computing (2266OE08)
DS	1. Computer Oriented Statistical Methods(2267OE01) 2. Data Visualization Techniques(2267OE02)	1. Data Wrangling with using python (2267OE03) 2. Data Science Applications (2267OE04)	1. Data Science Tools(2267OE05) 2. Big Data Architecture (2267OE06)	1.Bussines Analytics (2267OE07) 2.Soft Computing (2267OE08)
CS	1. Ethical Hacking(2262OE01) 2. Cyber Security Essentials (2262OE02)	1. Cloud Security Essentials. (2262OE03) 2. Vulnerability Assessment & Penetration Techniques (2262OE04)	1. Social Media Security (2262OE05) 2. Authorization and Authentication Techniques (2262OE06)	1. Security incident & Response Management (2262OE07) 2. Cyber Security & Laws (2262OE08)
ECE	1. Signal Processing (2204OE01) 2.Sensors & Actuators (2204OE02)	1. Principles of Electronic Communication (2204OE03) 2. Image Processing (2204OE04)	1. Principles of Computer Communication and Network (2204OE05) 2. Pattern Recognition (2204OE06)	1. 5G Technologies (2204OE07) 2. RTOS & System Programming (2204OE08)

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2400BS01) LINEAR ALGEBRA AND DIFFERENTIAL EQUATIONS

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

3 1 0 4

Course Objectives:

- 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.
- Geometrical approach to the mean value theorems, their application to the mathematical problems and Evaluation of improper integrals using Beta and Gamma functions.
- Partial differentiation, concept of total derivative, finding maxima and minima of function of two and three variables.
- Evaluation of multiple integrals and their applications.

Course Outcomes:

- Write the matrix representation of a set of linear equations and to analyse 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.
- Solve the applications on mean value theorems and evaluate the improper integrals using Beta and Gamma functions.
- Find the extreme values of functions of two variables with/ without constraints.
- Evaluate the multiple integrals and apply the concept to find areas, volumes.

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 power 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:

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

UNIT - IV:

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 multipliers.

UNIT - V:

Multiple Integrals: Evaluation of Double Integrals (Cartesian and Polar coordinates); Change of order of integration (only Cartesian form); Evaluation of Triple Integrals: Change of variables (Cartesian to polar) for double and (Cartesian to Spherical and Cylindrical polar coordinates) for triple integrals. Areas (by double integrals) and Volumes (by double integrals and triple integrals).

TEXT BOOKS:

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. Michael Greenberg, Advanced Engineering Mathematics, Pearson Education, 2nd Edition, 1998.
2. Erwin Kreyszig, Advanced Engineering Mathematics, John Wiley & Sons, 9thEdition, 2006.
3. Ramana B.V., Higher Engineering Mathematics, Tata McGraw Hill New Delhi, 11thReprint, 2017.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2405ES01) PROGRAMMING FOR PROBLEM SOLVING

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

3 0 0 3

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:

- To write algorithms and to draw flowcharts for solving problems.
- To convert the algorithms/flowcharts to C programming language.
- 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, structures, 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.

Strings: Introduction to strings, handling strings as array of characters, basic string functions available 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 to functions

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. Forouzan and R. 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, CRC Press. Basic computation and Programming with C, Subrata Saha and S. Mukherjee, Cambridge University Press.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2402BS05) ENGINEERING CHEMISTRY

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

3 0 0 3

Course Objectives:

- 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 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 N2, O2 and F2 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 complex 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: H2-O2 Fuel cell, CH3OH-O2 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 SN1, SN2 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 KMnO4 and chromic acid. Reduction reactions: Reduction of carbonyl compounds using

LiAlH4 & NaBH4.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, NH2, OH, -COOH, C=O, C≡ N, C=C, C≡ C), applications of IR Spectroscopy, 1H-NMR(NMR Spectroscopy), Principles of NMR spectroscopy, chemical shift, Chemical shifts of some organic protons , Introduction to Magnetic resonance imaging.

TEXT BOOKS:

1. Physical Chemistry, by P.W. Atkins.
2. Engineering Chemistry by P.C.Jain & M.Jain; Dhanpat Rai Publishing Company (P)Ltd., New Delhi.
3. Fundamentals of Molecular Spectroscopy, by C.N. Banwell.
4. Organic Chemistry: Structure and Function by K.P.C. Volhardt and N.E.Schore, 5thEdition.
5. University Chemistry, by B.M. Mahan, Pearson IV Edition.
6. Engineering Chemistry (NPTEL Web-book), by B.L. Tembe, Kamaluddin and M.S.Krishnan. ll.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2403ES01) COMPUTER AIDED ENGINEERING GRAPHICS

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

1 0 4 3

Course Objectives:

- To enable the students with various concepts like Dimension, Conventions and standards related to working drawing in order to become professionally efficient and to introduce fundamental concepts of curves used in engineering,
- 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.
- Understands and becomes efficient in applying the concept of Orthographic Projections of Points, Lines and Planes in industrial applications.
- Can employ freehand 3D pictorial sketching to aid in the visualization process and to efficiently communicate ideas graphically.
- Analyze a drawing and can efficiently communicate ideas graphically and Draw the 3D views using CAD.

Course Outcomes:

- Gets knowledge on usage of various drawing instruments and capable to draw various curves like conic curves, cycloidal curves and in-volutes.
- 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.
- Understand about orthographic projection and able to draw planes and solids according to orthographic projections.
- Can employ freehand 3D pictorial sketching to aid in the visualization process and to draw the 3D views using CAD software.
- To convert and draw the given orthographic view to isometric view using CAD software and vice versa.

Introduction to Auto CAD Software:

The Menu System, Toolbar (Standard, Object Properties, Draw, Modify and Dimension), Drawing Area (Background, Cross hairs, 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.

UNIT - I:

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, 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.

REFERENCES:

1. Engineering Drawing / Basant Agarwal and McAgarwal / McGraw Hill.

2. 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

(2400HS01) ENGLISH FOR SKILL ENHANCEMENT

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

2 0 0 2

Course Objectives:

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

Course Outcomes:

- Use English Language effectively in spoken and written forms.
- Comprehend the given texts and respond appropriately.
- Communicate confidently in various contexts and different cultures.
- 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.

TEXTBOOK:

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

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

(2402BS61) ENGINEERING CHEMISTRY LAB

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

0 0 2 1

Course objectives:

- 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:

- Ability to perform experiments illustrating the principles of chemistry relevant to the study of science and engineering.
- To record the amount of hardness and chloride content in water and interpret the significance of its presence in water.
- Understand the kinetics of a reaction from a change in concentration of reactants or products as a function of time.
- To report and predict the significance of properties like adsorption, conductance, viscosity, PH and surface tension.
- 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 Fe2+ by Potentiometry using KMnO4.
7. Determination of rate constant of acid catalysed hydrolysis of methyl acetate.
8. Synthesis of Aspirin and Paracetamol.
9. Thin layer chromatography calculation of Rf 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

(2400HS61) ENGLISH LANGUAGE & COMMUNICATION SKILLS LAB

B.Tech. I Year I Sem **L T P C**
0 0 3 1.5

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.

Course Outcomes:

Listening Skills:

- 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**.**
- 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.

Speaking Skills:

To involve students in speaking activities in various contexts.

To enable students express themselves fluently and appropriately in social and professional contexts.

Experiment – 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.

Experiment – 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.

Experiment - 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.

Experiment – 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.

Experiment – 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.

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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, LCD and a projector etc.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2405ES61) PROGRAM FOR PROBLEM SOLVING LAB

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

0 0 5 2.5

Course Objectives:

- 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.

Course Outcomes:

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

List of Experiments:

Experiment -1:

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.

Experiment - 2:

1. Write a program for fiend the max and min from the three numbers.
2. Write the program for the simple, compound interest.
3. Write program that declares Class awarded for a given percentage of marks, where mark <40%= Failed, 40% to <60% = Second class, 60% to <70%=First class, >= 70% = Distinction. Read percentage from standard input.

Experiment - 3:

1. 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)).
2. 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)
3. Write a program that finds if a given number is a prime number.

Experiment - 4:

1. Write a C program to find the sum of individual digits of a positive integer and test given number is palindrome.
2. 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.
3. Write a C program to generate all the prime numbers between 1 and n, where n is a value supplied by the user.
4. Write a C program to find the roots of a Quadratic equation.

Experiment - 5:

1. Write a C program to find the minimum, maximum and average in an array of integers.
2. Write a functions to compute mean, variance, Standard Deviation, sorting of n elements in single dimension array.
3. Write a C program that uses functions to perform the following:
   I. To find the GCD (greatest common divisor) of two given integers.
   II. To find x^n
   III. Transpose of a matrix with memory dynamically allocated for the new matrix as row and column counts may not be same.

Experiment - 6:

1. Write a program for reading elements using pointer into array and display the values using array.
2. Write a program for display values reverse order from array using pointer.
3. Write a program through pointer variable to sum of n elements from array.

Experiment - 7:

1. Write a C program to determine if the given string is a palindrome or not (Spelled same in both directions with or without a meaning like madam, civic, noon, abcba, etc.)
2. Write a C program that displays the position of a character ch in the string S or – 1 if S doesn‘t contain ch.
3. Write a C program to count the lines, words and characters in a given text.

Experiment - 8:

1. Write a C program that uses functions to perform the following operations using Structure
   - Reading a complex number
   - Writing Complex Number
   - Addition of 2 Complex Numbers
   - Multiplication of two complex numbers
2. Write a C program to store information of 5 students using structures.
3. Write a C program to access members of union?

Experiment - 9:

1. Write a C program to display the contents of a file to standard output device.
2. Write a C program which copies one file to another, replacing all lowercase characters with their upper case equivalents.
3. Write a C program to count the number of times a character occurs in a text file. The file name and the character are supplied as command line arguments.

Experiment - 10:

1. 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.
2. 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 * * * *
```

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

Experiment - 11:

1. Write a C program that uses non recursive function to search for a Key value in a given list of integers using linear search method.
2. 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.
3. Write a C program that implements the Bubble sort method to sort a given list of integers in ascending order.

Experiment - 12:

1. Write a C program that sorts the given array of integers using selection sort in descending order.
2. Write a C program that sorts the given array of integers using insertion sort in ascending order.
3. Write a C program that sorts a given array of names.

REFERENCES:

1. Byron Gottfried, Schaum's Outline of Programming with C, McGraw-Hill.
2. B.A. Forouzan and R.F. Gilberg C Programming and Data Structures, Cengage Learning, (3rd Edition).
3. Brian W. Kernighan and Dennis M. Ritchie, The C Programming Language, Prentice Hall of India.
4. R.G. Dromey, How to solve it by Computer, Pearson (16thImpression).
5. Programming in C, Stephen G. Kochan, Fourth Edition, Pearson Education.
6. Herbert Schildt, C: The Complete Reference, McGraw Hill, 4thEdition.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(24050C02) FRENCH LANGUAGE

B.Tech. I Year I Sem **L T P C**
2 0 0 0

Course Objectives:

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

Course Outcomes:

- The students will be able to communicate in French atA1level.
- The student will have an advantage in the competitive job market.
- This course benefits the graduates when pursuing study opportunities in the countries where 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 – Possessive adjectives - 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 – talk about 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 the year-The sports -Hobbies

UNIT – IV:

Speaking: Express the quantity - ask and give the price - express the need, the will and the capacity - 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 – the future tense

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 necessity in the present

Vocabulary: Seasons – Holidays - The city – Furniture

NOTE: The students are exposed to simple listening and reading activities.

REFERENCES:

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 by Evelyne Charvier-Berman, Anne C. Cummings.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2400BS03) NUMERICAL TECHNIQUES AND VECTOR CALCULUS

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

3 1 0 4

Course Objectives:

- To learn Methods of solving the differential equations of first and higher order
- To Evaluation of multiple integrals and their applications
- To The physical quantities involved in engineering field related to vector valued functions
- To The basic properties of vector valued functions and their applications to line, surface and volume integrals

Course Outcomes:

- To identify whether the given differential equation of first order is exact or not.
- To solve higher differential equation and apply the concept of differential equation to real world problems.
- To evaluate the multiple integrals and apply the concept to find areas, volumes, centre of mass and Gravity for cubes, sphere and rectangular parallel piped.
- To evaluate the line, surface and volume integrals and converting them from one to another.

UNIT - I:

First Order ODE Exact, linear and Bernoulli's equations; Applications: Newton's law of cooling, Law of natural growth and decay; Equations not of first degree: equations solvable for p, equations solvable for y, equations solvable for x and Clairaut's type.

UNIT - II:

Ordinary Differential Equations of Higher Order Second order linear differential equations with constant coefficients: Non-Homogeneous terms of the type eax, sin ax, cos ax, polynomials in x, eaxV(x)and x V(x), method of variation of parameters. Equations reducible to linear ODE with constant coefficients: Legendre's equation, Cauchy-Euler equation.

UNIT - III:

Multivariable Calculus (Integration): Evaluation of Double Integrals (Cartesian and polar coordinates); change of order of integration (only Cartesian form); Evaluation of Triple Integrals: Change of variables (Cartesian to polar) for double and (Cartesian to Spherical and Cylindrical polar coordinates) for triple integrals. Applications: Areas (by double integrals) and volumes (by double integrals and triple integrals), Centre of mass and Gravity (constant

and variable densities) by double and triple integrals (applications involving cubes, sphere and rectangular paralle lpiped).

UNIT - IV:

Vector Differentiation: Vector point functions and scalar point functions. Gradient, Divergence and Curl. Directional derivatives, Tangent plane and normal line. Vector Identities. Scalar potential functions. Solenoidal and Irrotational vectors.

UNIT - V:

Vector Integration: Line, Surface and Volume Integrals. Theorems of Green, Gauss and Stokes (without proofs) and their applications.

TEXT BOOKS:

1. B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36thEdition,2010
2. Erwin kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley&Sons,2006
3. G.B. Thomas and R.L. Finney, Calculus and Analytic geometry, 9thEdition, Pearson, Reprint, 2002.

REFERENCES:

1. Paras Ram, Engineering Mathematics, 2nd Edition, CBS Publishes.
2. S. L. Ross, Differential Equations, 3rd Ed., Wiley India, 1984.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2405ES02) DATA STRUCTURES

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

Course 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.

Course Outcomes:

- 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 using C & Python: 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. Applications of Binary Trees, B-Tree, B+ Tree: definitions and its construction algorithm.

UNIT – V:

Sorting and Hashing using C & Python: 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-hash function, collision resolution methods. Graphs: Basic Terminologies & Representations, Applications of a Graph, Graph traversal algorithms.

TEXTBOOKS:

1. Data structures and algorithms in python by Michael T. Goodrich

2. Data Structures and Algorithmic Thinking with Python by Narasimha Karumanchi

REFERENCE BOOKS:

1. Hands-On Data Structures and Algorithms with Python: Write complex and powerful code using the latest features of Python 3.7, 2nd Edition by Dr. Basant Agarwal, Benjamin Baka.

2. Data Structures and Algorithms with Python by Kent D. Lee and Steve Hubbard.

3. Problem Solving with Algorithms and Data Structures Using Python by Bradley N Miller and David L. Ranum.

4. Core Python Programming -Second Edition,R. Nageswara Rao, Dreamtech Press

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2402BS01) BASIC ELECTRICAL AND ELECTTRONICS ENGINEERING

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

3 0 0 3

Course Objectives:

- To introduce the concepts of electrical circuits and its components.
- To understand magnetic circuits, DC circuits and AC single phase & three phase circuits.
- To study and understand the different types of DC/AC machines and Transformers.
- To import the knowledge of various electrical installations.
- To introduce the concept of power, power factor and its improvement.

Course Outcomes:

- To analyze and solve electrical circuits using network laws and theorems.
- To understand and analyze basic Electric and Magnetic circuits.
- To study the working principles of Electrical Machines.
- To 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 RL- C circuit. Three-phase balanced 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, starting and speed control of induction motor. 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 and battery backup.

TEXT BOOKS:

1. Basic Electrical Engineering - D.P. Kothari and I.J. Nagrath, 3rd edition 2010, Tata McGraw Hill.
2. D.C. Kulshreshtha, “Basic Electrical Engineering”, McGraw Hill, 2009.
3. L.S. Bobrow, Fundamentals of Electrical Engineering”, Oxford University Press, 2011.
4. Electrical and Electronics Technology, E. Hughes, 10th Edition, Pearson, 2010.
5. Electrical Engineering Fundamentals, Vincent Deltoro, Second Edition, Prentice Hall India, 1989.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2400BS06) APPLIED PHYSICS

B.Tech. I Year II Sem **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:

- The student would be able to learn the fundamental concepts on Quantum behaviour of matter in its micro state.
- The knowledge of fundamentals of Semiconductor physics, Electronic devices, 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, de-Broglie's hypothesis, Wave-particle duality, Davisson and Germer experiment, Heisenberg's Uncertainty principle, Wave function and its physical significance, 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, LED and Device structure, Materials, Characteristics and figures of merit, Semiconductor photo detectors: Solar cell, PIN and Avalanche and their structure , Materials, working principle and Characteristics and applications.

UNIT - IV:

Lasers and Fiber: 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 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, 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.

REFERENCES:

1. Richard Robinett, Quantum Mechanics.
2. J. Singh, Semiconductor Optoelectronics: Physics and Technology, Mc Graw-Hill inc. (1995).
3. Online Course: "Optoelectronic Materials and Devices" by Monica Katiyar and Deepak Guptha on NPTEL.
4. "Semiconductor Physics And Devices", Mc Graw Hill, 4th Edition by Donald Neamen.
5. Introduction to Solid State Physics by Charles kittel, wiley student edition.
6. S.M. Sze, Semiconductor Devices: Physics and Technology, wiley (2008).

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2403ES61) ENGINEERING WORKSHOP

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

0 0 3 1.5

Course Objectives:

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

Course Outcomes:

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

List of Experiments:

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

(2400BS62) BASIC ELECTRICAL AND ELECTRONIC AND ENGINEERING LAB

B.Tech. I Year II Sem **L T P C**
0 0 2 1

Course Objectives:

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

Course Outcomes:

- Get an exposure to basic electrical laws.
- Understand the response of different types of electrical circuits to different excitations.
- Understand the measurement, calculation and relation between the basic electrical parameters
- Understand the basic characteristics of transformers and electrical machines.

List of Experiments:

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

(2405ES61) DATA STRUCTURES LAB

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

0 0 5 2.5

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:

- 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.

Experiment - 1: Write C and python program to implement recursive and non-recursive i) Linear search ii) Binary Search.

Experiment - 2: Write C and python program to implement

a) Stack b) Queue

Experiment - 3: Write C and python programs to implement Linked list to perform following operations

a) Insert an element in to a list. b) Delete an element from list

c) Search for a key element in list d) count number of nodes in list.

Experiment - 4: Write C and python programs to implement the following using a singly linked list.

a) Stack ADT b) Queue ADT.

Experiment - 5: Write C and python programs to implement the Deque (double ended queue) ADT using a list.

Experiment - 6: Write a C and python 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.

Experiment - 7: Write C and python programs that use recursive functions to traverse the given binary tree in

a) Preorder b) in order and c) post order.

Experiment - 8: Write a C and python program to perform the following operations

a) Insertion into a B-tree

b) Deletion from a B-tree

Experiment – 9: Write a C and python program to perform the following operation

a) Insertion into an AVL-tree

Experiment – 10: Write a C & Python program to implement hash table and perform the following operations

a) Inserting a key-value pair b) Deleting a key-value pair

Experiment –11: Write a C & Python program for implementing the following sorting methods

a)Mergesort b) Heapsort

Experiment –12: Write a C & Python program to implement the following sorting techniques

i) Bubblesort ii) Selectionsort

iv) Quicksort iv) Insertionsort

Experiment –13: Write a C & Python program to implement the Graph Traversal Techniques.

TEXT BOOKS:

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

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2400BS62)APPLIED PHYSICS LAB

B.Tech. I Year II Sem **L T P C**
0 0 1 1

List of Experiments:

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

Characteristics of a given Solar Cell

3. Light Emitting Diode

To study the VI 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

(2400MC01) ENVIRONMENTAL SCIENCE

B.Tech. I Year II Sem **L T P C**
1 0 0 0

Course Objectives:

- Understanding the importance of ecological balance for sustainable development.
- Understanding the impacts of developmental activities and mitigation measures.
- Understanding the environmental policies and regulations

Course Outcomes:

- The Engineering graduate will understand /evaluate / develop technologies on the basis of ecological principles and environmental regulations which in turn helps in sustainable development.

UNIT - I:

Ecosystems: Definition, Scope, and Importance of ecosystem. Classification, structure, and function of an ecosystem, Food chains, food webs, and ecological pyramids. Flow of energy, Biogeochemical cycles, Bioaccumulation, Biomagnifications, 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-wildlife 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 types of 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. NAPCC- Go Iinitiatives.

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 and its explosion, Crazy Consumerism, Environmental Education, Urban Sprawl, Human health, Environmental Ethics, Concept of Green Building, Ecological Foot Print, Life Cycle assessment (LCA), Low carbon lifestyle.

TEXT BOOKS:

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

REFERENCES:

1. Environmental Science: towards a sustainable future by Richard T. Wright. 2008 PHL Learning Private Ltd. New Delhi.

2. Environmental Engineering and science by Gilbert M. Masters and Wendell P. Ela. 2008 PHI Learning Pvt. Ltd.
3. Environmental Science by Daniel B. Botkin & Edward A. Keller, Wiley INDIA edition.
4. Environmental Studies by Anubha Kaushik, 4th Edition, New age international publishers.
5. Text book of Environmental Science and Technology - Dr. M. Anji Reddy 2007, BS Publications.
6. Introduction to Environmental Science by Y. Anjaneyulu, BS. Publications.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2405PC06) COMPUTER ORGANIZATION

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

3 1 0 4

Course Objectives:

1. To understand Basic Structure of Computers
2. To understand register language and micro operations
3. To analyze Mircro programming control and to understand computer arithmetic operations
4. To understand memory system & I/O Organization

Course Outcomes:

1. Able to understand Basic Structure of Computers
2. Able to understand register language and micro operations
3. Able to analyze Mircro programming control and to understand computer arithmetic operations
4. Able understand memory system & I/O Organization

UNIT I:

BASIC STRUCTURE OF COMPUTERS: Computer Types, Functional unit, Basic OPERATIONAL concepts, Bus structures, Software, Performance, multiprocessors and multi computers. Data Representation. Fixed Point Representation. Floating – Point Representation. Error Detection codes.

UNIT II:

REGISTER TRANSFER LANGUAGE AND MICROOPERATIONS: Register Transfer language.Register Transfer Bus and memory transfers, Arithmetic Mircrooperatiaons, logic micro operations, shift micro operations, Arithmetic logic shift unit. Instruction codes. Computer Registers Computer instructions – Instruction cycle. Memory – Reference Instructions. Input – Output and Interrupt. STACK organization. Instruction formats. Addressing modes. DATA Transfer and manipulation. Program control. Reduced Instruction set computer.

UNIT III:

MICRO PROGRAMMED CONTROL: Control memory, Address sequencing, microprogram example, design of control unit Hard wired control. Microprogrammed control COMPUTER ARITHMETIC: Addition and subtraction, multiplication Algorithms, Division Algorithms, Floating – point Arithmetic operations. Decimal Arithmetic unit Decimal Arithmetic operations.

UNIT V:

THE MEMORY SYSTEM & INPUT-OUTPUT ORGANIZATION: Basic concepts semiconductor RAM memories. Read-only memories Cache memories performance considerations, Virtual memories secondary storage. Introduction to RAID. Peripheral Devices, Input-Output Interface, Asynchronous data transfer Modes of Transfer, Priority Interrupt Direct memory Access, Input –Output Processor (IOP) Serial communication; Introduction to peripheral component, Interconnect (PCI) bus. Introduction to standard serial communication protocols like RS232.

TEXT BOOKS:

1. Computer Organization – Carl Hamacher, Zvonks Vranesic, SafeaZaky, Vth Edition, McGraw Hill.

2. Computer Systems Architecture – M.Moris Mano, IIIrd Edition, Pearson/PHI

REFERENCE BOOKS:

1. Computer Organization and Architecture – William Stallings Sixth Edition, Pearson/PHI

2. Structured Computer Organization – Andrew S. Tanenbaum, 4th Edition PHI/Pearson

3. Fundamentals or Computer Organization and Design, - Sivaraama Dandamudi Springer Int. Edition.

4. Computer Architecture a quantitative approach, John L. Hennessy and David A. Patterson, Fourth Edition Elsevier

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2405PC01) SOFTWARE ENGINEERING

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

Course Objectives:

- To comprehend the various software process models.
- To understand the types of software requirements and SRS document.
- To know the different software design and architectural styles.
- To learn the software testing approaches and metrics used in software development.
- To know about quality control and risk management.

Course Outcomes:

- To compare and select a process model for a business system.
- To identify and specify the requirements for the development of an application.
- To develop and maintain efficient, reliable and cost-effective software solutions.
- To critically think and evaluate assumptions and arguments of the client.

UNIT - I:

Introduction to Software Engineering: The evolving role of software, Changing Nature of Software, Software myths. A Generic view of process: A layered technology, a process framework, The Capability Maturity Model Integration (CMMI), Process patterns, process assessment, personal and team process models. Process models: The waterfall model, Incremental process models, Evolutionary process models, The Unified process, Agility and Agile Process models of Agile Development and Tools.

UNIT - II:

Software Requirements: Functional and non-functional requirements, User requirements, System requirements, Interface specification, the software requirements document (IEEE FORMAT) and its contents. Requirements engineering process: Feasibility studies, Requirements elicitation and analysis, Requirements validation, Requirements management. System models: Context Models, Behavioral models, Data models, Object models, structured methods. UML Diagrams.

UNIT - III:

Design Engineering: Design process and Design quality, Design concepts, the design model. Creating an architectural design: Software architecture, Data design, Architectural styles and

patterns, Architectural Design. Object-Oriented Design: Objects and object classes, An Object-Oriented design process, Design evolution. Performing User interface design: Golden rules, User interface analysis and design, interface analysis, interface design steps.

UNIT -IV:

Testing Strategies: A strategic approach to software testing, test strategies for conventional software, Black-Box and White-Box testing, Validation testing, System testing, the art of Debugging. Product metrics: Software Quality, Metrics for Analysis Model, Metrics for Design Model, Metrics for source code, Metrics for testing, Metrics for maintenance. Metrics for Process and Products: Software Measurement, Metrics for software quality.

UNIT - V:

Risk management: Reactive vs. Proactive Risk strategies, software risks, Risk identification, Risk projection, Risk refinement, RMMM, RMMM Plan. Quality Management: Quality concepts, Software quality assurance, Software Reviews, Formal technical reviews, Statistical Software quality Assurance, Software reliability, The ISO 9000 quality standards.

TEXT BOOKS:

1. Software Engineering A Practitioner's Approach, Roger S Pressman, 6th edition. McGraw Hill International Edition.
2. Software Engineering, Ian Sommerville, 7th edition, Pearson education.

REFERENCE BOOKS:

1. Software Engineering, A Precise Approach, Pankaj Jalote,Wiley India,2010.
2. Software Engineering: A Primer, Waman S Jawadekar, Tata McGraw- Hill,2008
3. Software Engineering, Principles and Practices, Deepak Jain, Oxford UniversityPress.
4. SoftwareEngineering1: Abstraction and modeling, Diner Bjorner, Springer Internationaledition,2006.
5. SoftwareEngineering2: Specification of systems and languages, Diner Bjorner, Springer Internationaledition2006.
6. Software Engineering Principles and Practice, Hans Van Vliet, 3rd edition, John Wiley &Sons Ltd.
7. Software Engineering3: Domains, Requirements, and Software Design, D. Bjorner, Springer International Edition.
8. Introduction to Software Engineering, R. J. Leach, CRC Press.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2405PC02) OPERATING SYSTEMS

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

Course Objectives:

- Introduce operating system concepts (i.e., processes, threads, scheduling, synchronization, deadlocks, memory management, file and I/O subsystems and protection)
- Introduce the issues to be considered in the design and development of operating system
- Introduce basic Unix commands, system call interface for process management, interprocess communication and I/O in Unix

Course Outcomes:

- Will be able to control access to a computer and the files that may be shared
- Demonstrate the knowledge of the components of computer and their respective roles in computing.
- Ability to recognize and resolve user problems with standard operating environments.
- Gain practical knowledge of how programming languages, operating systems, and architectures interact and how to use each effectively.

UNIT – I:

Operating System - Introduction, Structures - Simple Batch, Multiprogrammed, Time-shared, Personal Computer, Parallel, Distributed Systems, Real-Time Systems, System components, Operating System services, System Calls

UNIT – II:

Process and CPU Scheduling - Process concepts and scheduling, Operations on processes, Cooperating Processes, Threads, and Interposes Communication, Scheduling Criteria, Scheduling Algorithms, Multiple -Processor Scheduling. System call interface for process management-fork, exit, wait, waitpid, exec.

UNIT – III:

Deadlocks - System Model, Deadlocks Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, and Recovery from Deadlock Process Management and Synchronization - The Critical Section Problem, Synchronization Hardware, Semaphores, and Classical Problems of Synchronization, Critical Regions, Monitors Interprocess Communication Mechanisms: IPC between processes on a

single computer system, IPC between processes on different systems, using pipes, FIFOs, message queues, shared memory.

UNIT – IV:

Memory Management and Virtual Memory - Logical versus Physical Address Space, Swapping, Contiguous Allocation, Paging, Segmentation, Segmentation with Paging, Demand Paging, Page Replacement, Page Replacement Algorithms.

UNIT – V:

File System Interface and Operations -Access methods, Directory Structure, Protection, File System Structure, Allocation methods, Free-space Management. Usage of open, create, read, write, close, lseek, stat, ioctl system calls.

TEXT BOOKS:

1. Operating System Principles- Abraham Silberchatz, Peter B. Galvin, Greg Gagne 7th Edition, John Wiley

2. Advanced programming in the UNIX environment, W.R. Stevens, Pearson education.

REFERENCE BOOKS:

1. Operating Systems – Internals and Design Principles Stallings, Fifth Edition–2005, Pearson Education/PHI

2. Operating System A Design Approach- Crowley, TMH.

3. Modern Operating Systems, Andrew S. Tanenbaum 2nd edition, Pearson/PHI

4. UNIX programming environment, Kernighan and Pike, PHI/ Pearson Education

5. UNIX Internals -The New Frontiers, U. Vahalia, Pearson Education.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2405PC03) DISCRETE MATHEMATICS

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

3 1 0 4

Course Objectives:

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

Course Outcomes:

- 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 Coloring, Coloring maps and Planar Graphs, Coloring Vertices, Coloring Edges, List Coloring, 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 A Computer Oriented Approach, 3rd Edition by, Tata McGraw–Hill.

REFERENCES:

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 University Press. Schaum’s Outlines Series, Seymour Lipschutz, Marc Lipson,
3. Discrete Mathematics, Tata McGraw–Hill.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2405PC04) OBJECT ORIENTED PROGRAMMING THROUGH JAVA

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

3 0 0 3

Course Objective:

- 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:

- To solve real world problems using OOP techniques.
- To understand the use of abstract classes.
- To solve problems using java collection frame work and I/O classes.
- To develop multithreaded applications with synchronization.
- To develop applets for web applications and design GUI based applications

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-Array List, Linked List, Hash Set, Tree Set, Map- Hash Map, Tree Map, Legacy Classes-Vector, Stack, Hash table. 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, J Label, J Text Field, JCheckBox, Radio Button, J Text Area, etc simple Swing applications, Layout managers– Flow Layout, Border Layout, Grid Layout and Gridbag Layout. Event Handling-Events, Event sources, Event classes, Event Listeners, Delegation event model, Handling Mouse and Key events, Adapter classes.

TEXTBOOKS:

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.

REFERENCES:

1. Java for Programmers, P.J. Deitel and H.M. Deitel, PEA(or) Java: How to Program, P.J. Deitel and H.M. Deitel, PHI.

2. Object Oriented Programming through Java, P. Radha Krishna, Universities Press.

3. Thinking in Java, Bruce Eckel, 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

(2405PC61) OPERATING SYSTEM LAB

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

0 0 3 1.5

Course Objectives:

- To provide an understanding of the design aspects of operating system concepts through simulation
- Introduce basic Unix commands, system call interface for process management, interprocess communication and I/O in Unix

Course Outcomes:

- Simulate and implement operating system concepts such as scheduling, deadlock management, file management and memory management.
- Able to implement C programs using Unix system calls

List of Experiments:

1. Write C programs to simulate the following CPU Scheduling algorithms

a) FCFS b) SJF c) Round Robin d) priority

2. Write programs using the I/O system calls of UNIX/LINUX operating system

(open, read, write, close, fcntl, seek, stat, opendir, readdir)

3. Write a C program to simulate Bankers Algorithm for Deadlock Avoidance and Prevention.

4. Write a C program to implement the Producer – Consumer problem using semaphores using

UNIX/LINUX system calls.

5. Write C programs to illustrate the following IPC mechanisms

a) Pipes b) FIFOs c) Message Queues d) Shared Memory

6. Write C programs to simulate the following memory management techniques

a) Paging b) Segmentation

TEXT BOOKS:

1. Operating System Principles- Abraham Silberchatz, Peter B. Galvin, Greg Gagne 7th Edition, John Wiley

2. Advanced programming in the Unix environment, W.R.Stevens, Pearson education.

REFERENCE BOOKS:

1. Operating Systems – Internals and Design Principles, William Stallings, Fifth Edition– 2005, Pearson Education/PHI

2. Operating System - A Design Approach-Crowley, TMH.

3. Modern Operating Systems, Andrew S Tanenbaum, 2nd edition, Pearson/PHI

4. UNIX Programming Environment, Kernighan and Pike, PHI/Pearson Education

5. UNIX Internals: The New Frontiers, U. Vahalia, Pearson Education

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2405PC63) OBJECT ORIENTED PROGRAMMING THROUGH JAVA LAB

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

Course Objectives:

- To prepare students to become familiar with the Standard Java technologies ofJ2SE
- 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 multithreaded 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.

Experiment - 1: a) Write a java program to find the Fibonacci series using recursive and non recursive functions.

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

Experiment - 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.

Experiment - 3: a) Write a java program to represent Abstract class with example.

b) Write a java program to implement Interface using extends keyword.

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

Experiment - 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.

Experiment - 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.

Experiment - 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.

Experiment - 8: a) Write a java program to represent Array List class.

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

Experiment - 9: a) Write an applet program that displays a simple message.

b) Write a Java program compute factorial value using Applet.

c) Write a program for passing parameters using Applet.

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

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

TEXT BOOKS:

1. Java Fundamentals – A Comprehensive Introduction, Herbert Schildt and Dale Skrien, TMH.
2. Java for Programmers, P.J. Deitel and H.M. Deitel, PEA (or) Java: How to Program , P.J. Deitel and H.M. Deitel, PHI

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2400MC03) HUMAN VALUES AND PROFESSIONAL ETHICS

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

2 0 0 0

Course Objective:

- To enable the students to imbibe and internalize the Values and Ethical Behavior 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 (Akhand Samaj), Universal Order (Sarvabhaum Vyawastha) – from family to world family!

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:

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.

REFERENCES:

1. Prof. K. V. Subba Raju, 2013, Success Secrets for Engineering Students, Smart Student Publications, 3rd Edition.
2. Ivan IIIich, 1974, Energy & Equity, The Trinity Press, Worcester, and Harper Collins, 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

(2400HS03) BUSINESS ECONOMICS AND FINANCIAL ANALYSIS

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

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. Breakeven 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 of Business 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. 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, Cengage2011.
12. J.V. Prabhakar Rao & P.V. Rao, Managerial Economics & Financial Analysis, Maruthi Publishers, 2011.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2400BS04) PROBABILITY& STATISTICS

B.Tech. II Year II Sem **L T P 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, Baye'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. Test of Equality of means of two samples equality of sample mean and population mean (cases of known variance & unknown variance, equal and unequal variances) ii. Tests of significance 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. Chisquare distribution, it's properties, Chi-square test of goodness of fit.

TEXT BOOKS:

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

REFERENCES:

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 Gandhi Et
3. Fundamentals of Mathematical Statistics by S C Gupta and V.K. Kapoor O. neil by P&S only applications
4. Veerajan T., Engineering Mathematics (for semester III) , Tata McGraw-Hill, New Delhi,2010. Erwin Kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley & Sons,2006.
5. 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

(2466PC01) ARTIFICIAL INTELLIGENCE

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

Course Objectives:

- Introduce and define the meaning of Intelligence and explore various paradigms for knowledge encoding in computer systems.
- Introduce subfields of AI such as NLP, Game Playing, Bayesian Models, etc.

Course Outcomes:

- Identify problems where artificial intelligence techniques are applicable.
- Understand the relation between AI & various domains.
- Apply selected basic AI techniques; judge applicability of more advanced techniques.
- Participate in the design of systems that act intelligently and learn from experience.

UNIT - I:

Introduction to AI: Introduction to Artificial Intelligence, History of AI, Logic and Computation, Artificial Intelligence Languages, Multi Agent Systems

UNIT – II:

State Space Search and Heuristic Search Techniques: Defining problems as State Space search, Production systems and characteristics, Hill Climbing, Breadth first and depth first search, Best first search.

UNIT – III:

Knowledge Representation and Reasoning : Representations and Mappings, Approaches to knowledge representation, Representing simple facts in logic, Computable functions and predicates, Procedural vs Declarative knowledge, Logic Programming, Forward vs backward reasoning.

UNIT – IV:

Symbolic Logic and Statistical Reasoning, Symbolic Logic: Non-monotonic Reasoning, Logics for non-monotonic reasoning Statistical Reasoning: Probability and Bayes Theorem, Certainty factors, Probabilistic Graphical Models, Bayesian Networks, Markov Networks, Fuzzy Logic.

UNIT – V:

Important Applications: Introduction to Natural Language Processing, Hopfield Networks, Neural Networks, Recurrent Networks, Symbolic AI.

TEXT BOOKS:

1. Artificial Intelligence' R B Mishra, PHI.
2. Artificial Intelligence: A Modern Approach, Stuart Russel, Peter Norvig.
3. Artificial Intelligence, 2nd Edition, Rich and Knight.

REFERENCES:

1. Artificial Intelligence: A Modern Approach, Stuart Russel, Peter Norvig.
2. Artificial Intelligence, 2nd Edition, Rich and Knight.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2405PC07) DESIGN AND ANALYSIS OF ALGORITHMS

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

3 0 0 3

Course Objectives:

- To analyze performance of algorithms.
- To choose the appropriate data structure and algorithm design method for a specified application.
- To understand how the choice of data structures and algorithm design methods impacts the performance of programs.
- To solve problems using algorithm design methods such as the greedy method, divide and conquer, dynamic programming, backtracking and branch and bound.
- To understand the differences between tractable and intractable problems. To introduce P and NP classes.

Course Outcomes:

- Ability to analyze the performance of algorithms.
- Ability to choose appropriate algorithm design techniques for solving problems.
- Ability to understand how the choice of data structures and the algorithm design methods impact the performance of programs.

UNIT – I:

Introduction-Algorithm definition, Algorithm Specification, Performance Analysis Space complexity, 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, Game Tree, 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 person problem.

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, Sartaj Sahni and S. Rajasekharan, Universities Press.
2. Design and Analysis of Algorithms, P.H.Dave, H.B.Dave, 2nd Edition, Pearson Education.

REFERENCE BOOKS:

1. Algorithm Design: Foundations, Analysis and Internet examples, M. T. Goodrich and R. Tomassia, John Wiley and sons.
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, 4th edition, Jones and Bartlett Student edition.
5. Introduction to Algorithms, 3rd Edition, T. H. Cormen, C. E. Leiserson, R. L. Rivest, and C. Stein, PHI.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2405PC08) DATABASE MANAGEMENT SYSTEMS

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

3 1 0 4

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 De 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, UNITV).
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:

1. Database Systems, 6th edition, R Elmasri, Shamkant B.Navathe, Pearson Education.
2. Database System Concepts, Peter Rob & Carlos Coronel, Cengage Learning.
3. Introduction to Database Management, M. L. Gillenson and others, Wiley Student Edition.
4. Database Development and Management, Lee Chao, Auerbach publications, Taylor& Francis Group. Introduction to Database Systems, C. J. Date, Pearson Education. dependencies - Reasoning about FDs, Normal Forms, Properties of Decompositions.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2466PC61) ARTIFICIAL INTELLIGENCE LAB

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

0 0 3 1.5

Course Objectives:

- Provide a broad understanding of the basic techniques for building intelligent computer systems and an understanding of how AI is applied to problems.
- Gain knowledge in problem formulation and building intelligent agents
- Understand the search technique procedures applied to real world problems
- Understand the types of logic and knowledge representation schemes
- Acquire knowledge in planning and learning algorithms

Course Outcomes:

- Formulate a problem and build intelligent agents.
- Apply appropriate searching techniques to solve a real world problem
- Analyze the problem and infer new knowledge using suitable knowledge representation schemes.
- Develop planning and apply learning algorithms on real world problems.
- Design an expert system and implement natural language processing techniques.

List of experiments:

1. Study of facts, objects, predicates and variables in PROLOG.
2. Study of Rules and Unification in PROLOG.
3. Study of “cut” and “fail” predicate in PROLOG.
4. Study of arithmetic operators, simple input/output and compound goals in PROLOG.
5. Study of recursion in PROLOG.
6. Study of Lists in PROLOG.
7. Study of dynamic database in PROLOG.
8. Study of string operations in PROLOG. Implement string operations like substring, string position, palindrome etc.)
9. Write a prolog program to maintain family tree.
10. Write a prolog program to implement all set operations (Union, intersection, complement etc.
11. Write a prolog program to implement Library Management system.
12. Write a prolog program to solve “Water Jug Problem”.

TEXT BOOKS:

1. Artificial Intelligence' R B Mishra, PHI.
2. Knowledge and Knowledge based system 'Russell.
3. Introduction to Artificial Intelligence, CHARNIAK, PEARSON.
4. Artificial Intelligence, Stuard Russell & Peter Norvig, Prentice.
5. Introduction to Turbo PROLOG, Carl Townsend, BPB Publication.

REFERENCES:

1. Artificial Intelligence: Elaine Rich, Kevin Knight, Mc-Graw Hill.
2. Introduction to AI & Expert System: Dan W. Patterson, PHI.
3. Artificial Intelligence by Luger (Pearson Education).
4. Russel & Norvig, Artificial Intelligence: A Modern Approach, Pearson Education.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(2405PC64) DATABASE MANAGEMENT SYSTEMS LAB

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

0 0 3 1.5

Course Objectives:

- 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:

- 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(Bus Entity)

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

Example for creation of a normalized "Passenger" table.

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

Similarly create all other tables.

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

● 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 DML commands:

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 HAVINGCLAUSES.

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 reservedboat103
- 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_name VARCHAR(30);

DECLARE cl CURSOR FOR SELECT ppno,name FROM Passenger WHERE
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, the possibility exists that these instances will not be kept consistent when the data within the table is updated, leading to a loss of data integrity. A table that is sufficiently normalized is less vulnerable to problems of this kind, because its structure reflects the basic assumptions for when multiple instances of the same information should be represented by a single instance only.

For the above table in the First normalization we can remove the multi valued attribute Ticket_id and place it in another table along with the primary key of passenger. First Normal Form: The above table can be divided into two tables as shown below.

Passenger

Name Age Sex Address PassportID

Passport_id Ticket_id

You can do these cond and third normal forms if required. And how Normalize dtables are given 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 to display his/her name & tax, by creating table under employee database as below.

Employee_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. Developaquerytograntallprivilegesofemployeestableintodepartmentstable
2. Developaquerytograntsomeprivilegesofemployeestableintodepartmentstable
3. Developaquerytorevokeallprivilegesofemployeestablefromdepartmentstable
4. Develop a query to revoke some privileges of employees table from department stable
5. Write a query to implement the save point

6. Write a query to implement the commit
7. Write a query to implement troll back

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

(2400MC04) INDIAN CONSTITUTION*

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

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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 Principles of 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 the welfare 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 Edn., Lexis Nexis,2014.

REFERENCES:

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