

MALLAREDDYENGINEERINGCOLLEGEFORWOMEN**(Autonomous Institution-UGC, Govt. of India)****Accredited by NAAC with 'A+' Grade, Govt. Of India,
Permanently Affiliated to JNTUH, Approved by AICTE****DEPARTMENT of CSE(CYBER SECURITY)****COURSE STRUCTURE R24****I Year B.Tech–I Semester(I Semester)**

S. No	Course Code	Subject	L	T	P	C	Max. Marks	
							INT	EXT
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	2400BS06	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	2400BS62	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	2400MC02	French Language/ German*	2	0	0	0	100	
		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	2400BS02	Numerical Techniques and Vector Calculus	3	1	0	4	40	60
2	2405ES02	Data Structures and Algorithms	3	0	0	3	40	60
3	2402ES01	Basic Electrical and Electronics Engineering	3	0	0	3	40	60
4	2400BS05	Applied Physics	3	1	0	4	40	60
5	2403ES61	Engineering Workshop	0	0	3	1.5	40	60
6	2402ES61	Basic Electrical and Electronics Engineering Lab	0	0	2	1	40	60
7	2405ES62	Data Structures and Algorithm lab	0	0	5	2.5	40	60
8	2400BS61	Applied Physics lab	0	0	2	1	40	60
9	2400MC01	Environmental Science*	2	0	0	0	100	-
		TOTAL	14	2	12	20	420	480

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

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

S.No	Course Code	Subject	L	T	P	C	Max. Marks	
							INT	EXT
1	2462PC01	Cyber Security Essentials	3	1	0	4	40	60
2	2462PC02	Computer Organization and Operating System	3	0	0	3	40	60
3	2405PC08	Database Management Systems	3	1	0	4	40	60
4	2405PC03	Discrete Mathematics	3	0	0	3	40	60
5	2405PC10	Computer Networks	3	0	0	3	40	60
6	2405PC64	Database Management Systems Lab	0	0	3	1.5	40	60
7	2405PC66	Computer Networks Lab	0	0	3	1.5	40	60
8	2400MC03	Human values and Professional Ethics*	2	0	0	0	100	0
		TOTAL	17	1	8	20	420	480

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

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

S.No	Course Code	Subject	L	T	P	C	Max. Marks	
							INT	EXT
1	2400BS04	Probability and Statistics	3	1	0	4	40	60
2	2400HS03	Managerial Economics and Financial Analysis	3	0	0	3	40	60
3	2462PC03	Applied Cryptography	3	1	0	4	40	60
4	2462PC04	Cyber Laws and IT Security	3	0	0	3	40	60
5	2405PC04	Object Oriented Programming through Java	3	0	0	3	40	60
6	2462PC61	Applied Cryptography Lab	0	0	3	1.5	40	60
7	2405PC63	Object Oriented Programming through Java Lab	0	0	3	1.5	40	60
9	2400MC04	Indian Constitution *	2	0	0	0	100	0
		TOTAL	20	1	8	20	460	540

***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	2462PC05	Ethical Hacking	3	0	0	3	40	60
2		Professional Elective-I	3	0	0	3	40	60
	2462PE19	Database Security						
	2466PE12	Artificial Intelligence and its Applications						
	2467PE10	Data Science						
	2405PE13	Software Engineering						
	2405PE14	Automata and compiler design						
	2462PE01	Authentication Techniques						
3		Professional Elective-II	3	0	0	3	40	60
	2462PE02	Malware Analysis						
	2466PE13	Deep Learning Techniques						
	2267PE04	Data Science Tools						
	2412PE01	Mobile Computing						
	2462PE03	Linux Programming						
	2412PE02	Data Mining and Data Ware Housing						
4		Open Elective -I	3	0	0	3	40	60
5	2405PC07	Design and Analysis of Algorithms	3	0	0	3	40	60
6	2462PC62	Ethical Hacking lab	0	0	3	1	40	60
7	2405PC69	Design and Analysis of Algorithms Lab	0	0	3	1	40	60
8	2462PR02	Field Project/Societal Related Project	0	0	2	2	40	60
9	2462PR01	Innovative Product Development-1	0	0	2	1	40	60
10	2400MC05	Technical Communications and Soft Skills*	2	0	0	0	100	0
		TOTAL	20	1	8	20	460	540

**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	2412PC03	Full Stack Development	3	1	0	4	40	60
3	2466PC02	Machine Learning	3	0	0	3	40	60
4		Professional Elective –III	3	0	0	3	40	60
	2462PE04	Threat Intelligence						
	2466PE03	Cognitive Computing						
	2467PE03	Data Handling & Visualization						
	2462PE05	Mobile application Development						
	2405PE06	Cloud computing						
	2462PE06	Distributed Trust and Block Chain Technology						
5		Open Elective-II	3	0	0	3	40	60
6	2412PC64	Full stack Development Lab	0	0	3	1.5	40	60
7	2466PC62	Machine Learning Lab	0	0	3	1.5	40	60
8	2462PR03	Innovative Product Development-2	0	0	2	1	40	60
9	2400MC07	Gender Sensitization*	2	0	0	0	100	0
		TOTAL	20	1	8	20	460	540

****Mandatory course: Non-credit course, 50% of scoring is required for the award of the degree
Industry Oriented Mini Project/Internship-During Summer Vacation- Evaluation 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	2462PC06	Vulnerability Assessment and Penetration Testing	3	0	0	3	40	60
2	2462PC07	Digital Forensics	3	0	0	3	40	60
4		Open Electives- III	3	0	0	3	40	60
5	2400HS04	Fundamentals of Management and Entrepreneurship	3	0	0	2	40	60
6		Professional Elective-IV	3	0	0	3	40	60
	2462PE07	Security Incident & Response Management (SOC)						
	2466PE05	Large Language Models						
		Data Visualization using Power BI						
	2462PE08	Mobile Application Security						
	2405PE15	Web services						
	2462PE25	Cloud Security						
7	2462PC63	Vulnerability Assessment and Penetration Testing Lab	0	0	3	1	40	60
8	2462PC64	Digital Forensics Lab	0	0	3	1	40	60
9	2462PR04	Innovative Product Development -3	0	0	2	1	40	60
10	2462PR05	Industry Oriented Mini Project/ Internship	0	0	2	1	40	60
11	2462PR06	Research Project-I	0	0	2	2	40	60
12	2400MC08	Research Methodology & Intellectual Property Rights*	2	0	0	0	100	0
		TOTAL	20	0	12	20	460	540

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

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
	2462PE09	Data Analytics for Fraud Detection						
	2466PE06	Generative AI						
	2405PE01	Object Oriented Analysis and Design						
	2462PE10	IOT Security						
	2467PE02	Distributed Systems						
	2462PE11	Platforms and Systems Security						
2		Professional Elective -VI	3	0	0	3	40	60
	2462PE24	Social Media Security						
	2462PE12	AI in Cyber Security						
		DevOps						
	2462PE13	Cyber Security of Critical Infrastructure						
	2462PE14	Wireless and Mobile Security						
	2462PE15	Network Defense						
3		Open Elective-IV	3	0	0	3	40	60
4	2462PR07	Technical Seminar	0	0	4	1	100	0
5	2462PR08	Innovation Startup & Entrepreneurship	0	0	8	2	50	100
6	2462PR09	Research Project-II	0	0	10	8	50	100
7	2400MC06	Indian Tradition Knowledge*	2	0	0	0	100	0
		TOTAL	0	0	22	20	200	200

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

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PROFESSIONAL ELECTIVES

Professional Elective –I	Professional Elective -II	Professional Elective -III
Web & Database Security	Malware Analysis	Threat Intelligence
Artificial Intelligence	Principles Of Deep Learning	Cognitive Computing and Applications
Data Science	Data Science Tools	Data Handling & Visualization
Software Engineering	Mobile Computing	Mobile application Development
Automata and compiler design	Linux Programming	Cloud computing
Authentication Techniques	Data Mining and Data Ware Housing	Distributed Trust and Block Chain Technology
Professional Elective –IV	Professional Elective -V	Professional Elective -VI
Security Incident & Response Management (SOC)	Data Analytics for Fraud Detection	Social Media Security
Large Language Models	Generative AI	AI in Cyber Security
Data Visualization using Power BI	UI Flutter	DevOps
Mobile Application Security	IOT Security	Cyber Security of Critical Infrastructure
Web services	Distributed Systems	Wireless and Mobile Security
Cloud Security	Platforms and Systems Security	Network Defense

OPEN ELECTIVES

Department	Open Elective-I	Open Elective-II	Open Elective-III	Open Elective -IV
CSE	(2405OE01) Fundamentals Of Database Systems (2405OE02) Automata Theory and Compiler Design	(2405OE03) Data Structures (2405OE04) Computer Organization and operating systems	(2405OE05) Java Programming (2405OE06) Case Tools & Software Testing	(2405OE07) Data & Knowledge Mining (2405OE08) Web Application Development
IT	2412OE01-Advanced Computer Architecture 2412OE02-Advanced Operating Systems	2412OE03- Embedded Systems 2412OE04- Scripting Languages	2412OE05-Advanced computer Networks 2412OE06-Advanced Algorithms	2412OE07-Computational Complexity 2412OE08-Robotic Process Automation
AIML	2466OE01-Knowledge Representation& Reasoning/ 2466OE02-Neural Networks	2466OE03-Advanced Artificial Intelligence/ 2466OE04-Reinforcement Learning	2466OE05-deep learning using python / 2466OE06-Edge Analytics	2466OE07-Cognitive Computing & Applications/ 2266OE08-Quantom computing
DS	2267OE01-Computer Oriented Statistical Methods 2267OE02-Data Visualization Techniques	2467OE03-Data Wrangling Using Python 2267OE04-Data Science Tools	2267OE05-Big Data Architecture 2467OE06-Data Science Applications	2467OE07-Business Analytics 2267OE08-Soft computing
CS	2462OE01-Ethical Hacking 2462OE02-Cyber Security Essentials	2462OE03-Cloud Security Essentials 2462OE04-Vulnerability Assessment & Penetration Testing	2462OE05-Social Media Security 2462OE06-Authorization and Authentication Techniques	2462OE07-Security incident & Response Management 2462OE08-Cyber Security & Laws
ECE	2404OE01-principles of electronic communication/ 2404OE05-computer organization	2404OE02-Principles of computer Communication and network / 2404OE06-computer architecture	2404OE03-cellular mobile communication/ 2404OE07-Pattern recognition	2404OE04-5G technologies/ 2404OE08-RTOS and System programming

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

2400BS01: LINEAR ALGEBRA AND DIFFERENTIAL EQUATIONS

B.TECH I YEAR I SEMESTER

L T P C

3 1 0 4

Course Objectives: To learn

- a) 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.
- b) Study concept of Eigen values and Eigen vectors.
- c) Methods for solving the first and higher order differential equations.
- d) Partial differentiation, concept of total derivative, finding maxima and minima of function of two variables.
- e) Geometrical approach to the mean value theorems, their application to mathematical problems.

Course Outcomes:

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

- f) Write the matrix representation of a set of linear equations and to analyze the solution of the system of equations
- g) Find the Eigen values and Eigen vectors.
- h) Solve the first order differential equations and higher order differential equations.
- i) Find the extreme values of functions of two variables.
- j) Solve the applications on mean value theorems.

UNIT-I:

10 L

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.

UNIT-II:

10 L

Eigen values and Eigen vectors: Eigen values and Eigenvectors and their properties (only statements); Cayley-Hamilton Theorem (without proof); Finding inverse and powers of a matrix

by Cayley-Hamilton Theorem; Diagonalization of a matrix. **Vector Space, basis, linear dependence and independence (Only Definitions).**

UNIT-III:

10L

Ordinary Differential Equations: Exact differential equations, Linear and Bernoulli's equations. Applications: Newton's law of cooling. Second order linear differential equations with constant coefficients: Non-Homogeneous terms of the type e^{ax} , $\sin ax$, $\cos ax$, polynomials in x , $e^{ax}V(x)$ and $x V(x)$.

UNIT-IV:

9 L

Partial Differentiation: Definitions of Limit and Continuity. Partial Differentiation; Euler's Theorem; Total derivative; Jacobian; Functional dependence & independence, Maxima and minima of functions of two variables.

UNIT-V:

9 L

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).

TEXTBOOKS:

- a) B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 44th Edition, 2017.
- b) R. K. Jain and S.R.K. Iyengar, Advanced Engineering Mathematics, Narosa Publications, 5th Edition, 2016.

REFERENCE BOOKS:

- a) Erwin Kreyszig, Advanced Engineering Mathematics, John Wiley & Sons, 9th Edition, 2013.
- b) Ramana B.V., Higher Engineering Mathematics, Tata McGraw Hill New Delhi, 38th Reprint, 2022.
- c) G.B. Thomas and R.L. Finney, Calculus and Analytic geometry, Pearson, 9th Edition, Reprint, 2002.
- d) N.P. Bali and Manish Goyal, A text book of Engineering Mathematics, Laxmi Publications, Reprint, 2008.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

2405ES01: PROGRAMMING FOR PROBLEM SOLVING

B.TECH I YEAR I SEMESTER

L T P C

3 0 0 3

Course Objectives:

- To understand the various steps in program development.
- To learn the syntax and semantics of C programming and Python.
- Understand Lists, Dictionaries and Tuple in Python.
- To learn the usage of structured programming approach in C Programming.
- Implement Object Oriented Programming concepts in Python

Course Outcomes: The student will learn

- To write algorithms and to draw flowcharts for solving problems.
- Create, run and manipulate Python Programs using core data structures like Lists, Dictionaries.
- To code and test a given logic in C programming language.
- To decompose a problem into functions and to develop modular reusable code.
- To use arrays, pointers, strings and structures to write C programs, Demonstrate proficiency in handling Strings and File Systems.
- Interpret the concepts of Object-Oriented Programming as used in Python.

UNIT I:

Introduction to C Programming: Structure of a C program, Identifiers, Variables (with data types and space requirements), Operators, Precedence and Expression evaluation, Type conversion.

UNIT II:

Conditional Branching and Loops: Writing and Evaluation of Conditionals with If, If-Else, else-if ladder Switch-Case, goto, Iteration with For, While, Do While Loops

Arrays: One-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: Declaring a function, Parameters and return type of a function, passing parameters to functions, Recursive Functions.

Structures: Defining structures, initializing structures, unions.

Pointers: Idea of pointers, Defining pointers, Pointer to Pointer, Dynamic Memory Management functions(DMA)

File Handling in C: 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.

UNIT – IV

Introduction to Python Programming: Modes: Interactive Mode, Scripting Mode, Identifiers, Keywords, Variables, Comments, Lines and Indentations, Quotations, Assigning Values to Variables, Data Types in Python, Mutable Vs Immutable, Fundamental Data Types: int, float, complex, bool, str, Advanced Data Types(List, Tuple, Dictionary, set, etc..).

Decision Making Statements: if Statement, if-else Statement, elif Statement. Looping Statements: For and While loops, Nested loops, using else Statement with loops, Control Statements: break Statement, continue Statement, Pass Statement.

Python Slicing & Indexing: Forward Direction Slicing with +ve Step, Backward Direction Slicing with -ve Step, Built-in String Functions.

UNIT – V

Python Functions: Creating a Function, Function Calling, Parameters in Function, Types of Arguments, Scope of Variables, Python Built-in Functions. Python Lambda Functions.

Python File Handling: Opening a File, Reading the File, Read Lines of the File, Writing the File, creating a New File Using with Statement with Files, File Pointer Position, Modifying File Pointer Position Renaming the File & Removing the File, Writing Python Output to the Files File Related Methods.

Text Books:

- i. Computer Science: A Structured Programming Approach Using C, B. A. Forouzan and R. F. Gilberg, Third Edition, Cengage Learning.
- ii. Programming in C. P. Dey and M Ghosh, Second Edition, Oxford University Press.
- iii. Core Python Programming, Wesley J. Chun, Second Edition, Pearson

Reference Books:

- The C Programming Language, B.W. Kernighan and Dennis M. Ritchie, Second Edition, Pearson education.
- Programming with C, B. Gottfried, 3rd edition, Schaum's outlines, McGraw Hill Education (India) PvtLtd.
- Programming Languages, A.B. Tucker, R.E. Noonan, TMH.
- Programming Languages, K. C. Loudon and K A Lambert., 3rd edition, Cengage Learning.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

2400BS06: ENGINEERING CHEMISTRY

B.TECH I YEAR I SEMESTER

L T P C

3 0 0 3

COURSE OBJECTIVES

- To acquire the knowledge of water treatment which are essential for the Engineers and in industry.
- To include the importance of fundamental aspects of battery chemistry, significance of corrosion and it's control to protect the structures.
- To account the applications of different kinds of polymers in various fields.
- To imbibe the basic concepts of petroleum products.
- To impart the basic knowledge of smart materials which have excellent engineering applications.

COURSE OUTCOMES:

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

- The modern technology and interpret different problems involved in industrial utilization of water.
- The required principles and concepts of batteries, corrosion to predict the behavior of a system under different variables.
- Knowledge of various terms related to polymer science, classification, properties, and its applications
- The potential applications of petroleum products and their practical utility in order to become good engineers and entrepreneurs.
- Apply the knowledge of various smart materials to find solutions for various engineering problems.

UNIT - I:

Water and its treatment: Introduction – hardness of water – Causes of hardness - Types of hardness: temporary and permanent – expression and units of hardness, Numerical problems. Estimation of hardness of water by complexometric method. Potable water and its specifications - Steps involved in the treatment of potable water – Disinfection of potable water by chlorination and break - point chlorination.

Boiler troubles: Scales, Sludges and Caustic Embrittlement. Internal treatment of Boiler feed water - Calgon conditioning, Phosphate conditioning. External treatment methods - Softening of water by ion- exchange processes. Desalination of water –Reverse osmosis.

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UNIT - II:

Battery Chemistry and Corrosion

Introduction- Classification of batteries-primary, secondary and reserve batteries with examples. Basic requirements for commercial batteries. Construction, working and applications of Zn-air and Lithium-ion battery, Applications of Li-ion battery to electrical vehicles. Fuel Cells-Differences between battery and a fuel cell, Construction and applications of solid oxide fuel cell.**Electrochemical sensors:** Potentiometric Sensors and voltammetric sensors. Examples: analysis of Glucose.

Corrosion: Causes and effects of corrosion, Theories of chemical and electrochemical corrosion
1) mechanism of electrochemical 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: Galvanizing and Tinning.

UNIT-III

Polymeric materials

Definition–Classification of polymers with examples–Types of polymerizations–addition (free radical addition) and condensation polymerization–Nylon 6,6. Glass transition temperature (T_g).

Plastics: Definition and characteristics-thermoplastic and thermosetting plastics, Preparation, Properties and engineering applications of PVC, Bakelite and Teflon. Fiber reinforced plastics (FRP)-Applications.

Conducting polymers: Characteristics and classification of conducting polymers with examples. Mechanism of conduction in trans-polyacetylene. Applications of conducting polymers.

Biodegradable polymers: Concept and advantages- Polyvinyl alcohol and its applications.

UNIT – IV

Energy Sources:

Introduction, Classification-solid fuels: coal– analysis of coal–proximate and ultimate analysis and their significance. Liquid fuels–petroleum and its refining, cracking types – moving bed catalytic cracking. Knocking – octane and cetane rating, synthetic petrol- Fischer-Tropsch's process; Gaseous fuels–composition and uses of natural gas, LPG and CNG. Biodiesel-transesterification and advantages.

UNIT - V:

Smart materials and their engineering applications

Introduction- Classification of smart materials, chromic materials- photo, electric, and thermochromic materials. Working principle and applications of shape memory alloys- Nitinol,

piezoelectric materials- Rochelle salt,thermoreponsive materials- PNIPAM, self-healing materials- Sulphur-Selenium alloy magnetostrictive material- ALFENOL, GALFENOL electrostrictive materials- PMN, polyurethane.

Suggested Text Books:

1. Engineering Chemistry by P.C.Jain and M. Jain, Dhanpatrai Publishing Company,2010
2. Engineering Chemistry by Rama Devi, Venkata Ramana Reddy and Rath, Cengage learning, 2016
3. Engineering Analysis of Smart Material Systems by Donald J. Leo, Wiley, 2007.
4. Text book of Engineering Chemistry by Jaya Shree Anireddy, Wiley Publications.
5. Bahadur Sastry N V, Principles of Polymer Science, 2002, Narosa Publishing Co, New Delhi.
6. Engineering Chemistry by Shashi Chawla, Dhanpatrai and Company (P) Ltd. Delhi (2011)

REFERENCE BOOKS:

1. Engineering Chemistry by Shikha Agarwal, Cambridge University Press, Delhi(2015)

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

2403ES01: COMPUTER AIDED ENGINEERING GRAPHICS

B.TECH I YEAR I SEMESTER

L T P C

1 0 4 3

Course Objectives:

1. To impart conceptual knowledge about AutoCAD software in creating, editing and manipulating 2D engineering drawings.
2. To inculcate the required skills to apply engineering drawing principles effectively for accurately sketching conics and cycloids.
3. To enhance visualization skills for better interpreting the position of points and lines, enabling accurate representation of their orthographic projections.
4. To familiarize drafting skills for constructing orthographic views of planes and solids in diverse orientation.
5. To develop the competency in creating isometric views from orthographic views and vice-versa.

Course Outcomes:

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

1. Demonstrate proficiency in using AutoCAD software to create, edit, and manipulate 2D engineering drawings.
2. Apply the concepts of engineering drawing for sketching conic sections and cycloids.
3. Analyze position of points and lines for representing their orthographic projections.
4. Sketch orthographic projections of planes and solids to analyze their different orientations
5. Evaluate the given orthographic projections for developing isometric view and vice versa.

UNIT-I:

Introduction to AutoCAD Software:

Menu Bar, Ribbon – Draw and Modify Toolbar, Dimension etc., Drawing Area - Background, Crosshairs, Coordinate System, Dialog boxes and windows, Shortcut menus, The Command Line, The Status Bar, Different methods of zoom as used in CAD, Select and erase objects - Basic geometrical constructions using AutoCAD commands.

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

Engineering Curves: Construction of Ellipse, Parabola, Hyperbola - General method and Special methods

Cycloidal Curves - Cycloid, Epicycloid and Hypocycloid.

UNIT-II:

Orthographic Projections, Projections of Points & Straight Lines:

Principles of Orthographic Projections – Conventions; Projections of points; Projections of lines –Line parallel to one plane and both the planes, line inclined to one plane and parallel to other plane, Line inclined to both the planes;

UNIT-III:

Projections of Planes:

Projections of Planes - Surface parallel to one plane and perpendicular to other plane, Surface Inclined to one plane and perpendicular to other plane, Surface inclined to both the planes.

UNIT-IV:

Projections of Regular Solids:

Projections of Regular Solids - Prisms, Pyramids, Cylinder and Cone – Axis parallel to one plane and perpendicular to other plane, Axis inclined to one plane and parallel to other plane, Axis inclined to both the planes.

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 View to Orthographic Views and Vice-versa, Conventions.

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

TEXT BOOKS:

- I. Engineering Drawing, N.D. Bhatt – N.D. Bhatt & V.M Panchal, 48th Edition, 2005 Charotar Publishing House, Gujarat.
- II. Engineering Drawing / Basant Agarwal and MC Agarwal / McGraw Hill

REFERENCES:

1. Engineering drawing – P.J. Shah .S.Chand Publishers.
2. Engineering Drawing- Johle/Tata Macgraw Hill Book Publisher.
3. Computer Aided Engineering Drawing – S. Trymbaka Murthy, - I.K. International Publishing House Pvt. Ltd., New Delhi, 3rd revised edition-2006.
4. "Computer Aided Engineering Drawing"by Dr. M H Annaiah, Dr C N Chandrappa and

Dr B SudheerPremkumar Fifth edition, New Age International Publishers.

5. Engineering Drawing by K.VenuGopal&V.Prabu Raja New Age Publications

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

2400HS01: ENGLISH FOR SKILL ENHANCEMENT

B.TECH I YEAR I SEMESTER

L T P C
2 0 0 2

COURSE OBJECTIVES

This course will enable the students to:

1. Improve the language proficiency of students in English with an emphasis on Vocabulary, Grammar, Reading and Writing skills
2. Develop study skills and communication skills in various professional situations.
3. Study engineering subjects more effectively and critically using the theoretical and practical components of the syllabus.

COURSE OUTCOMES:

Students will be able to:

4. Understand the importance of vocabulary and sentence structures.
5. Choose appropriate vocabulary and sentence structures for their oral and written Communication.
6. Demonstrate their understanding of the rules of functional grammar.
7. Develop comprehension skills from the known and unknown passages.
8. Take an active part in drafting paragraphs, letters, essays, abstracts, précis and reports in various contexts.
9. Acquire basic proficiency in reading and writing modules of English.

UNIT – I

Chapter entitled ‘**Toasted English**’ by **R. K. Narayan** from “**English: Language, Context and Culture**” published by Orient Black Swan, Hyderabad.

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

Acquaintance with Prefixes and Suffixes from Foreign Languages to form Derivatives - Synonyms and Antonyms

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

Reading: Reading and Its Importance- Techniques for Effective Reading.

Writing: Sentence Structures -Use of Phrases and Clauses in Sentences- Transformation of Sentences: Simple-Complex-Compound and vice-versa. **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

Chapter entitled ‘**Appro JRD**’ by **Sudha Murthy** from “**English: Language, Context and Culture**” published by Orient Black Swan, Hyderabad.

Vocabulary: Words Often Misspelt - **Homophones, Homonyms and Homographs**

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

Reading: Sub-Skills of Reading – Skimming and Scanning – Exercises for Practice; Book Review

Writing: Nature and Style of Writing- Defining /Describing People, Objects, Places and Events– Classifying- Providing Examples or Evidence

UNIT – III

Chapter entitled ‘**Lessons from Online Learning**’ by **F. Haider Alvi, Deborah Hurst et al** from “**English: Language, Context and Culture**” published by Orient Black Swan, Hyderabad.

Vocabulary: Words Often Confused - Words from Foreign Languages and their Use in English.

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

Reading: Sub-Skills of Reading – Intensive Reading and Extensive Reading – Exercises for Practice.

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

UNIT – IV

Chapter entitled ‘**Art and Literature**’ by **Abdul Kalam** from “**English: Language, Context and Culture**” published by Orient Black Swan, Hyderabad.

Vocabulary: Standard Abbreviations in English

Grammar: Redundancies and Clichés in Oral and Written Communication.

Reading: Survey, Question, Read, Recite and Review (**SQ3R Method**) - Exercises for Practice

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

UNIT – V

Chapter entitled ‘**Go, Kiss the World**’ by **Subroto Bagchi** from “**English: Language, Context and Culture**” published by Orient Black Swan, Hyderabad.

Vocabulary: Technical Vocabulary and their Usage; One Word Substitution; Phrasal Verbs.

Grammar: Common Errors in English (Covering all the other aspects of grammar which were not covered in the previous units)

Reading: Reading Comprehension-Exercises for Practice

Writing: **Précis Writing;** Technical Reports- Introduction – Characteristics of a Report; Technical Reports-Categories of Reports Formats-Structure of Reports (Manuscript Format)-Writing a Report.

TEXT BOOK:

1. “**English: Language, Context and Culture**” by Orient Black Swan Pvt. Ltd, Hyderabad. 2022. Print.

REFERENCE BOOKS:

10. English for Engineers P.(2018) Cambridge university Press
11. Kumar, S and Lata, P. (2018). Communication Skills. Oxford University Press.
12. Zinsser, William. (2001). On Writing Well. Harper Resource Book.
13. Hamp-Lyons, L. (2006). Study Writing. Cambridge University Press.
14. Exercises in Spoken English. Parts I –III. CIEFL, Hyderabad. Oxford University Press.
15. Sudarshana, N.P. and Savitha, C. (2018). English for Engineers. Cambridge University Press
16. Effective Academic Writing by Liss and Davis (OUP)
17. Richards, Jack C. (2022) Interchange Series. Introduction, 1,2,3. Cambridge University Press

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

2400BS62: ENGINEERING CHEMISTRY LAB

B.TECH I YEAR I SEMESTER

L T P C
0 0 2 1

COURSE OBJECTIVES

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

1. Estimation of hardness and chloride content in water to check its suitability for drinking purpose.
2. Students are able to perform estimations of acids and bases using conductometry, potentiometry and pH metry methods.
3. To measure the physical properties like adsorption, surface tension and viscosity.
4. To synthesize polymers like polyaniline and urea-formaldehyde resin.
5. To summarize the data and find the applicability to real world scenario.

COURSE OUTCOMES

6. To record the amount of hardness and chloride content in water and interpret the significance of its presence in water.
7. Able to perform methods such as conductometry, potentiometry and pH metry in order to find out the concentrations of equivalence points of acids.
8. To report and predict the significance of properties like viscosity and surface tension.
9. Able to learn how to synthesize polymers.
10. Apply the skills gained to solve societal issues real world scenario.

List of Experiments

Volumetric Analysis:

- Determination of total hardness of water by complexometric method using EDTA.
- Determination of chloride content of water by Argentometry.
- **Conductometry:** Estimation of an HCl by Conductometric titrations.
- **Potentiometry:** Estimation of Fe^{2+} by Potentiometry using KMnO_4 .

- **pH Metry:** Estimation of HCl by pH metry.

Lubricants:

- Determination of viscosity of castor oil and ground nut oil by using Ostwald's viscometer.
- Determination of acid value of lubricant oil
- Determination of surface tension of a give liquid using stalagmometer.

Preparations:

- Synthesis of polyaniline.
- Synthesis of urea-formaldehyde resin.

Virtual lab experiments:

- Batteries for electrical vehicles.
- Functioning of solar cell and its applications.
- Smart materials for Biomedical applications.

Text books:

1. Laboratory Manual on Engineering Chemistry, S. K. Bhasin and Sudha Rani, Dhanpat Rai Publications.
2. College Practical Chemistry V. K. Ahluwalia, Sunitha Dhingra, Adargh Gulati, University Press Pvt. Ltd.
3. Practical Chemistry, Dr. O. P. Pandey, D. N. Bajpai, and Dr. S. Giri, S. Chand.
4. Lab manual for Engineering chemistry by B. Rama devi and P. Aparna, S Chand Publications, New Delhi (2022)

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. Text book on Experiments and calculations in Engineering chemistry – S.S. Dara.
4. https://www.electronics-notes.com/articles/electronic_components/battery-technology/li-ion-lithium-ion-technology.php.
5. <https://www.gamry.com/application-notes/physechem/dssc-dye-sensitized-solar> cells.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

2400HS61: ENGLISH LANGUAGE AND COMMUNICATION SKILLS LABORATORY

B.TECH I YEAR I SEMESTER

L T P C

0 0 3 1.5

The English Language and Communication Skills (ELCS) Lab focuses on the production and practice of sounds of language and familiarizes the students with the use of English in everyday situations both in formal and informal contexts.

COURSE OBJECTIVES:

The course will

1. Facilitate computer-assisted multi-media instruction enabling individualized and independent language learning
2. Sensitize the students to the nuances of English speech sounds, word accent, intonation and rhythm
3. Bring about a consistent accent and intelligibility in students' pronunciation of English by providing an opportunity for practice in speaking
4. Improve the fluency of students in spoken English and neutralize the impact of dialects.
5. Train students to use language appropriately for public speaking, group discussions and presentations.

COURSE OUTCOMES:

Students will be able to:

6. Understand the nuances of English language through audio- visual experience and group activities
7. Neutralise their accent for intelligibility
8. Speak with clarity and confidence which in turn enhances their employability skills

SYLLABUS

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

- 1. Computer Assisted Language Learning (CALL) Lab**
- 2. Interactive Communication Skills (ICS) Lab**

LISTENING SKILLS

Objectives

- To develop their listening skills so that they may appreciate the 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 will be given practice in listening to the sounds of the language, to be able to recognize them and distinguish between different sounds, to be able to mark stress and recognize and use the right intonation in sentences.

1. Listening for general content
2. Listening for specific information
3. Intensive Listening
4. Inference Listening

SPEAKING SKILLS

Objectives

5. To involve students in spoken language activities in various contexts
6. To enable students express themselves fluently and appropriately in social and professional contexts
7. Oral practice
8. Describing objects/situations/people
9. Role play – Individual/Group activities
10. Just A Minute (JAM) Sessions

ENGLISH LANGUAGE AND COMMUNICATION SKILLS LAB

Exercise – I

CALL Lab:

Understand: Listening Skill- Its importance – Purpose- Process- Types- Barriers- Effective Listening.

Practice: Introduction to Phonetics – Speech Sounds – Vowels and Consonants –

Minimal

Pairs -Consonant Clusters- Past Tense Marker and Plural Marker- Testing Exercises

ICS Lab:

Understand: Spoken vs. Written language- Formal and Informal English.

Practice: Ice-Breaking Activity and JAM Session- Situational Dialogues – Greetings – Taking Leave –Introducing Oneself and Others.

Exercise – II

CALL Lab:

Understand: Structure of Syllables – Word Stress– Weak Forms and Strong Forms – Stress pattern in sentences – Intonation.

Practice: Basic Rules of Word Accent - Stress Shift - Weak Forms and Strong Forms- Stress pattern in sentences – Intonation - Testing Exercises

ICS Lab:

Understand: Features of Good Conversation – Strategies for Effective Communication.
Practice: Situational Dialogues – Role Play- Expressions in Various Situations –Making Requests and Seeking Permissions - Telephone Etiquette.

Exercise - III

CALL Lab:

Understand: Errors in Pronunciation-Neutralising Mother Tongue Interference (MTI).
Practice: Common Indian Variants in Pronunciation – Differences between British and American Pronunciation -Testing Exercises

ICS Lab:

Understand: Descriptions- Narrations- Giving Directions and Guidelines
Practice: Giving Instructions – Seeking Clarifications – Asking for and Giving Directions – Thanking and Responding – Agreeing and Disagreeing – Seeking and Giving Advice – Making Suggestions.

Exercise – IV

CALL Lab:

Understand: Listening for General Detail& Specific Details.
Practice: Listening Comprehension Tests - Testing Exercises

ICS Lab:

Understand: Public Speaking – Exposure to Structured Talks - Non-verbal Communication Presentation Skills.
Practice: **Viva Voce;** Making a Short Speech – Extempore- Making a Presentation:

Exercise – V

CALL Lab:

Understand : **Blog Writing**
Practice: Writing a Blog

ICS Lab:

Understand: Group Discussion-Purpose; Do's & Don'ts, Parts of a GD-Roles in a GD.
Practice: Group Discussion

Source of Material (Master Copy):

11. Exercises in Spoken English. Part 1,2,3. CIEFL and Oxford University Press

Suggested Software:

Cambridge Advanced Learners' English Dictionary with CD.

Grammar Made Easy by Darling Kindersley.

Punctuation Made Easy by Darling Kindersley.

Oxford Advanced Learner's Compass, 10th Edition.

English in Mind (Series 1-4), Herbert Puchta and Jeff Stranks with Meredith Levy, Cambridge.

English Pronunciation in Use (Elementary, Intermediate, Advanced) Cambridge University Press.

English Vocabulary in Use (Elementary, Intermediate, Advanced) Cambridge University Press.

TOEFL & GRE (KAPLAN, AARCO & BARRONS, USA, Cracking GRE by CLIFFS).
Digital All

Orell Digital Language Lab (Licensed Version)

REFERENCE BOOKS:

(2022). English Language Communication Skills – Lab Manual cum Workbook. Cengage Learning India Pvt. Ltd.

Shobha, KN & Rayen, J. Lourdes. (2019). Communicative English – A workbook. Cambridge University Press

Kumar, Sanjay & Lata, Pushp. (2019). Communication Skills: A Workbook. Oxford University Press

Board of Editors. (2016). ELCS Lab Manual: A Workbook for CALL and ICS Lab Activities. Orient Black Swan Pvt. Ltd.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

2405ES61: PROGRAMMING FOR PROBLEM SOLVING LAB

B.TECH I YEAR I SEMESTER

L T P C

0 0 5 2.5

Course Objectives: The students will learn the following:

11. To develop programs to solve basic problems by understanding basic concepts in C like operators, control statements etc.
12. To develop modular, reusable and readable C Programs using the concepts like functions, arrays etc.
13. Learn Syntax and Semantics and create Functions in Python.
14. Handle Strings and Files in Python.
15. Understand Lists, Dictionaries and Regular expressions in Python.
16. Implement Object Oriented Programming concepts in Python.

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

- formulate the algorithms for simple problems
- translate given algorithms to a working and correct program
- represent and manipulate data with arrays, strings and structures
- Student able to understand the basic concepts scripting and the contributions of scripting language
- Ability to explore python especially the object-oriented concepts, and the built in objects of Python.
- Ability to create practical and contemporary applications such as TCP/IP network programming, Web applications, discrete event simulations

WEEK 1:

1. 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 program for find the max and min from the three numbers.

WEEK 2:

1. 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.
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 prints a multiplication table for a given number and the number of

rows in the table.

For example, for a number 5 and rows = 3, the output should

be: $5 \times 1 = 5$

$5 \times 2 = 10$

$5 \times 3 = 15$

WEEK 3:

- Write a C program to find the sum of individual digits of a positive integer and test given number is palindrome.
- 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.
- Write a C program to generate all the prime numbers between 1 and n, where n is a value supplied by the user.
- Write a C program to read in two numbers, x and n, and then compute the sum of this Geometric progression: $1 + x + x^2 + x^3 + \dots + x^n$. For example: if n is 3 and x is 5, then the program computes $1 + 5 + 25 + 125$.

WEEK 4:

- a. Write a C program to find the minimum, maximum and average in an array of integers
- b. Write a C program that uses functions to perform the following:
 1. Addition of Two Matrices
 2. Multiplication of Two Matrices
- c. Write C programs that use both recursive and non-recursive functions
 1. To find the factorial of a given integer.
 2. To find the GCD (greatest common divisor) of two given integers.
- d. Write a program through pointer variable to sum of n elements from array.

WEEK 5:

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 to insert a sub-string in to a given main string from a given position.
3. Write a C program to count the lines, words and characters in a given text.

WEEK 6:

1. Write a C program to store information of 5 students using structures.
2. Write a C program to access members of union?
3. Write a C program to display the contents of a file to standard output device.
4. Write a C program which copies one file to another, replacing all lowercase characters with their uppercase equivalents.

WEEK 7:

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

WEEK 8:

- Write a program that asks the user to enter a length in centimetres. If the user enters a negative length, the program should tell the user that the entry is invalid. Otherwise, the program should convert the length to inches and print out the result. There are 2.54 centimetres in an inch.
- Write a program that asks the user how many credits they have taken. If they have taken 23 or less, print that the student is a freshman. If they have taken between 24 and 53, print that they are a sophomore. The range for juniors is 54 to 83, and for seniors it is 84 and over.
- A year is a leap year if it is divisible by 4, except that years divisible by 100 are not leap years unless they are also divisible by 400. Write a program that asks the user for a year and prints out whether it is a leap year or not
- A number is called a perfect number if it is equal to the sum of all of its divisors, not including the number itself. For instance, 6 is a perfect number because the divisors of 6 are 1, 2, 3, 6 and $6 = 1 + 2 + 3$.

WEEK 9:

1. Write a program that computes the factorial of a number. The factorial, $n!$, of a number n is the product of all the integers between 1 and n , including n .
For Example: $5! = 1 \cdot 2 \cdot 3 \cdot 4 \cdot 5 = 120$
2. The Fibonacci numbers are the sequence below, where the first two numbers are 1, and each number thereafter is the sum of the two preceding numbers. Write a program that asks the user how many Fibonacci numbers to print and then prints that many.
1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89 . . .
3. Write a program that asks the user to enter a string. The program should then print the following:
 - The total number of characters in the string
 - The string repeated 10 times

- The first character of the string (remember that string indices start at 0)
- The first three characters of the string
- The last three characters of the string
- The string backwards
- The seventh character of the string if the string is long enough and a message otherwise
- The string with its first and last characters removed
- The string in all caps
- The string with every a replaced with an e
- The string with every letter replaced by a space.

WEEK 10:

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

Enter your string: Qbert

Q*ert!!!

- A website requires the users to input username and password to register. Write a program to check the validity of password input by users.

Following are the criteria for checking the password:

- At least 1 letter between [a-z]
- At least 1 number between [0-9]
- At least 1 letter between [A-Z]
- At least 1 character from [\$#@]
- Minimum length of transaction password: 6
- Maximum length of transaction password: 12

Your program should accept a sequence of comma separated passwords and will check them according to the above criteria. Passwords that match the criteria are to be printed, each separated by a comma.

Example If the following passwords are given as input to the program:

Then, the output of the program should be:

ABd1234@1

- Write a program that accepts sequence of lines as input and prints the lines after making all characters in the sentence capitalized
Suppose the following input is supplied to the program:

Hello world

Practice makes perfect

Then, the output should be:

HELLO WORLD

PRACTICE MAKES PERFECT

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

2400MC02: FRENCH LANGUAGE

B.TECH I YEAR I SEMESTER

L T P C
2 0 0 0

Introduction:

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

Course Objectives:

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

Course Outcomes

- The students will be able to communicate in French at A1 level.
- 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.

REFERENCE BOOKS

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

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

2400BS02: NUMERICAL TECHNIQUES & VECTOR CALCULUS

B.TECH I YEAR II SEMESTER

L T P C

3 1 0 4

Course Objectives: To learn

1. Apply numerical techniques to find the root of algebraic and transcendental equations
2. Apply concept of finite differences and estimate the value for the given data using interpolation.
3. Evaluation differentiation and integration by numerical methods.
4. The physical quantities involved in engineering field related to vector valued functions.
5. Evaluation of multiple integrals and the basic properties of vector valued functions and their applications to line, surface and volume integrals

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

6. Find the root of polynomial and transcendental equations and solve linear equations by numerical methods.
7. Estimate the value for the given data using interpolation.
8. Evaluate numerical differentiation and integration whenever analytical methods are not applicable.
9. Find the directional derivatives, Irrotational and Solenoidal function and angle between the surfaces.
10. Evaluate multiple integrals, line, surface and volume integrals.

UNIT-I:

9 L

Numerical Solution of Algebraic & Transcendental Equations: Introduction, Bisection Method, Regula Falsi Method, Iteration Method and Newton-Raphson Method. Solving linear system of equations by Jacobi's and Gauss Seidel Iteration method.

UNIT-II:

10 L

Interpolation: Finite differences: forward differences, backward differences, central differences, symbolic relations and separation of symbols, Interpolation using Newton's forward and backward difference formulae. Central difference interpolation: Gauss's forward and backward formulae, Lagrange's method of interpolation.

UNIT-III:**9 L**

Numerical Differentiation & Integration: Numerical differentiation: Taylor's series, Picard's method, Euler and modified Euler's methods, Runge-Kutta method of fourth order for first order ODE. Numerical integration: Trapezoidal rule and Simpson's 1/3rd and 3/8th rules.

UNIT – IV:**10 L**

Vector Differentiation: Scalar and Vector point functions. Gradient, Divergence and Curl, Directional derivatives, angle between the surfaces, Tangent plane and Normal line. Solenoidal and Irrotational vector, Scalar potential functions, Laplacian operator.

UNIT – V:**10 L**

Multiple Integrals & Vector Integration: Evaluation of Double Integrals (Cartesian); Change of order of integration (only Cartesian form); Evaluation of Triple Integrals. Line, Surface and Volume Integrals.

TEXTBOOKS:

1. B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 44th Edition, 2017.
2. R. K. Jain and S.R.K. Iyengar, Advanced Engineering Mathematics, Narosa Publications, 5th Edition, 2016.
3. M . K Jain, S R K Iyengar, R.K Jain, Numerical Methods for Scientific and Engineering Computation, New age International publishers.

REFERENCE BOOKS:

1. Erwin Kreyszig, Advanced Engineering Mathematics, John Wiley & Sons, 9th Edition, 2013.
2. Ramana B.V., Higher Engineering Mathematics, Tata McGraw Hill New Delhi, 38th Reprint, 2022.
3. G.B. Thomas and R.L. Finney, Calculus and Analytic geometry, Pearson, 9th Edition, Reprint, 2002.
4. N.P. Bali and Manish Goyal, A text book of Engineering Mathematics, Laxmi Publications, Reprint, 2008.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

2405ES02: DATA STRUCTURES AND ALGORITHMS

B.TECH I YEAR II SEMESTER

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:

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

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

UNIT-I

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

UNIT-II

Stacks and Queues using C& Python: 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. Double ended Queue and Operations on each types of Queues and Algorithms. Applications of queues.

UNIT-III

Linked Lists using C&Python: Singly linked lists: Representation in memory, Algorithms of several operations: Traversing, Searching, Insertion into, Deletion from linked list; Linked representation of Stack and Queue. **Doubly Linked List:** operations on it and algorithmic analysis. **Circular Linked List:** all operations on it. Applications of Linked List.

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
2402ES01: BASIC ELECTRICAL AND ELECTRONICS
ENGINEERING

B.TECH I YEAR II SEMESTER

L T P C
3 0 0 3

Course Objectives

1. To familiarize the fundamentals, applications of electronic devices & circuits.
2. To acquire the knowledge of various logical operations, basic number systems and logic gates.
3. Emphasis on basic elements in electrical circuits and concepts of DC circuits.
4. To analyze DC Circuits using Network Theorems
5. To analyze AC circuits through AC fundamentals.
6. Construction, operational features of energy conversion devices i.e. DC and AC machines.

Course Outcomes: After going through this course, the student gets a thorough knowledge on

1. Different semiconductor devices, operation of diodes and BJT, their voltage-current characteristics.
2. Number systems, complements of numbers and logic gates.
3. Basic concepts of electrical circuits and networks.
4. Solving the electrical circuits using various network theorems.
5. Constructional details and principle of operation of Electrical Machines.

UNIT I :Semiconductor Devices

Characteristics of PN J unction Diode and Zener Diode. Bipolar Junction Transistor — CB, CE, CC Configurations and Characteristics. Transistor as a switch

UNIT II :Number Systems and Boolean Algebra

Overview of Number Systems, 1's complement and 2's Complement, BCD codes, Excess-3 codes, Boolean Algebra-Basic Theorems and properties, Minimization of Boolean function using K-Maps up to four variables.

UNIT III :Logic Gates

Logic Gates—NOT, OR, AND, NOR, NAND, XOR, XNOR. Implementation of

Universal Gates with basic gates. Truth Tables and Functionality,

UNIT IV: DC And AC Circuits

Electrical circuit elements (R, L, and C), Ohm's Law and its limitations, KCL & KVL, series, parallel, series-parallel circuits, Thevenin's, Norton's, and Super Position theorem, and Simple numerical problems.

A.C. Fundamentals: Equation of AC Voltage and current, waveform, time period, frequency, amplitude, phase, phase difference, average value, RMS value, form factor, and peak factor, (Simple Numerical problems).

UNIT V : Electrical Machines

Construction and working principle of DC Motor, DC Generator, Single Phase Transformer, Three Phase Induction Motors and Alternator.

TEXT BOOKS:

1. Basic Electrical Engineering - D.P. Kothari and I.J. Nagrath, Tata McGraw Hill.
2. A text book of Electrical Technology Vol- 1, 2 by B.L. Theraja and A K Theraja- S Chand Publications.
3. Electronic Devices and Circuits, S. Salivahanan, N. Suresh Kumar, A. Vallavaraj, Tata McGraw-Hill companies.
4. Switching Theory and Logic Design by A. Anand Kumar, PHI Publications.

REFERENCE BOOKS:

- 1 Basic Electrical Engineering, T.K. Naga sarkar and M.S. Sukhija, Oxford University Press
2. M. Morris Mano, Digital Design, 3rd Edition, Prentice Hall of India Pvt. Ltd., 2003

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

2400BS05: APPLIED PHYSICS

B.TECH I YEAR II SEMESTER

L T P C

3 1 0 4

Course Objectives

- To familiarize students with demonstrating skills in scientific enquiry, problem solving and laboratory techniques.
- To develop demonstrate competency and understanding of the concepts found in quantum mechanics.
- To solve non-traditional problems that potentially draw on knowledge in multiple areas of physics.
- To develop an understanding of fundamentals and properties of engineering materials.

Course Outcomes: Upon graduation:

- Understanding the multiple ideas of quantum mechanics and solids.
- Identify the unique vocabulary associated with electronics and learn basic concepts of semiconductor diodes such as p-n junction diode, zener diode and their characteristics.
- Gain knowledge on classification of various optoelectronic devices, lasers and optical fibers and their applications in science and technology.
- Understanding the broad outline of engineering materials such as dielectric materials and magnetic materials.

UNIT-I :QUANTUM MECHANICS

Introduction to quantum physics, blackbody radiation– Stefan-Boltzmann's law, Wein's and Rayleigh-Jean's law, Planck's radiation law (qualitative) – Photo electric effect - Wave-particle duality, de-Broglie's hypothesis - Davisson and Germer experiment –Heisenberg uncertainty principle -Born interpretation of the wave function – Time independent Schrodinger wave equation-particle in one dimensional potential box.

UNIT – II:ELECTRON THEORY OF METALS AND BAND THEORY OF SOLIDS

Electron Theory of Metals: Free electron theory (merits & demerits-qualitative)- quantum free electron theory, expression for electrical conductivity - Fermi-Dirac distribution function.

Band Theory of Solids: Bloch's theorem -Kronig-Penney model (qualitative) –E-K diagram- effective mass of electron-origin of energy bands- classification of solids.

UNIT - III: SEMICONDUCTORS AND DEVICES

Intrinsic and extrinsic semiconductors –Variation of Fermi level with temperature and doping concentration - Carrier transport: diffusion and drift - Hall effect - direct and indirect band gap semiconductors - construction, principle of operation and characteristics of P-N Junction diode, Zener diode –Luminescence – LED, PIN diode, avalanche photo diode (APD) and solar cells, their structure, materials, working principle and characteristics.

UNIT-IV: LASERS AND FIBER OPTICS

Lasers: Characteristics of Lasers, Interaction of radiation with matter: stimulated absorption, spontaneous and stimulated emission, Einstein's relations, Principle and working of Laser: Population inversion, Pumping mechanisms, Types of Lasers: Ruby laser, He-Ne laser, Semiconductor lasers - Applications of laser.

Fiber Optics: Introduction to Optical fiber, Optical fiber as a dielectric wave guide, Total internal reflection, Acceptance angle, Acceptance cone and Numerical aperture, mode and transmission of signal through Step and Graded index fibers, Losses associated with optical fibers, Applications of optical fibers in communication system – applications of optical fibers in other fields.

UNIT - V: DIELECTRIC AND MAGNETIC MATERIALS

Dielectric Materials: Electric dipole, dipole moment, dielectric constant, polarizability, electric displacement, electric susceptibility, types of polarization: electronic, ionic(quantitative) and orientation polarizations, space-charge (qualitative), Internal fields in a solid, Clausius Mossotti equation, Ferroelectrics, Piezo electrics and Pyro electrics, Applications of dielectrics.

Magnetic Materials: Introduction- origin of magnetic moment - Classification of magnetic materials, dia, para,ferro, anti-ferro and ferri -Hysteresis curve-soft and hard magnetic materials-applications of magnetic materials.

Text Books:

1. Engineering physics, B.K. Pandey, S. Chaturvedi- Cengage learning.
2. Halliday and Resnick, Physics, Wiley.
3. A text book of Engineering Physics, Dr. M. N. Avadhanulu, Dr. P. G. Kshirsagar- S. Chand (11e).
4. Engineering Physics by P.K. Palanisamy, SciTech Publications.

Reference Books:

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 SEMESTER

L T P C

0 0 3 1.5

Course Objectives:

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

Course Outcomes: At the end of the course, the student will be able to:

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

TRADES FOR EXERCISES:

a. Carpentry

- Cross lap joint
- Dovetail Joint

b. Fitting

- Straight Fitting
- V- fitting

c. Tin Smithy

- Rectangular Tray
- Open Scoop

d. House Wiring

- Two bulbs controlled by one way switch (Series and parallel connection)
- One bulb controlled by two-two way switches (Stair case connection).

e. Foundry

- Single piece pattern
- Split-piece pattern

f. Black Smithy

- Round to Square
- S - Hook

Trades for Demonstration:

1. Plumbing
2. Welding
3. Machine Shop
4. Power tools

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

2402ES61: BASIC ELECTRICAL AND ELECTRONICS ENGINEERING LAB

B.TECH I YEAR II SEMESTER

L T P C

0 0 2 1

COURSE OBJECTIVES:

- To exhibit the students to the operation of PN junction diode and Zener diode.
- To acquire the knowledge of various logic gates.
- To design an electrical system.
- To analyze a given network by applying various circuit laws and network theorems.
- To expose the students to the operation of DC machine and transformer.

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

1. Plot the characteristics of PN junction diode and Zener diode.
2. Select suitable gates for particular application
3. Explain the concept of circuit laws and network theorems and apply them to laboratory measurements.
4. Be able to systematically obtain the equations that characterize the performance of an electric circuit as well as solving them.
5. Perform the required tests on transformers and DC motors.

LIST OF EXPERIMENTS

- PN Junction diode characteristics.
- Zener diode characteristics.
- Transistor as a switch
- Input – Output Characteristics of Transistor in CB Configuration
- Input – Output Characteristics of Transistor in CE Configuration
- Input – Output Characteristics of Transistor in CC Configuration
- Realization of Basic logic gates.
- Implementation of Universal gates using Basic gates
- Verification of Ohm's Law
- Verification of KVL and KCL.

- Verification of Thevenin's theorem.
- Verification of Norton's theorem.
- Verification of Superposition theorem.
- Calculations and Verification of Impedance and current of RL, RC, and RLC Series Circuits
- Load test on DC shunt Motor.
- Measurement of voltage, and current of a single-phase transformer.

TEXT BOOKS:

- Jacob Millman - Electronic Devices and Circuits, McGraw Hill Education.
- D.P. Kothari and I. J. Nagrath, "Basic Electrical Engineering", Tata McGraw Hill, 4th Edition, 2019.

REFERENCE BOOKS:

- i. Horowitz -Electronic Devices and Circuits, David A. Bell – 5th Edition, Oxford.
- ii. Chinmoy Saha, Arindam Halder, Debaati Ganguly - Basic Electronics-Principles and Applications, Cambridge, 2018.
- iii. Robert L. Boylestead, Louis Nashelsky- Electronic Devices and Circuits theory, 11th Edition, 2009, Pearson.
- iv. P. Ramana, M. Suryakalavathi, G.T.Chandrasheker,"Basic Electrical Engineering", S. Chand, 2nd Edition, 2019.
- v. D. C. Kulshreshtha, "Basic Electrical Engineering", McGraw Hill, 2009.
- vi. M. S. Sukhija, T. K. Nagsarkar, "Basic Electrical and Electronics Engineering", Oxford, 1st Edition, 2012.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

2405ES62: DATA STRUCTURES & ALGORITHMS LAB

B.TECH I YEAR II SEMESTER

L T P C

0 0 5 2.5

Course Objectives:

1. To make the student to implement data structures using python and C programming languages.
2. To make the student write ADTS for all data structures.

Course Outcomes:

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

3. For a given algorithm student will able to analyze the algorithms to determine time & computation complexity and justify the correctness.
4. For a given Search problem (Linear Search and Binary Search) student will able to implement it.
5. 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.
6. 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.

Week 1: Write a C program and Python program to implement the following searching techniques in both recursive and non recursive manner.

1. Linear search ii) Binary Search.

Week 2: Write a C & Python program to implement the following using List and Dictionary.

- Stack b) Queue

Week 3: Write a C & Python program to implement Linked list data structure and perform the 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.

Week 4: Write a C & Python program to implement the following using a singly linked list.

- a) Stack b) Queue

Week 5: Write a C & Python program to implement the Deque (double ended queue) ADT using a List.

Week 6: Write a C & python program to perform the following operations:

1. Insert an element into a binary search tree.
2. Delete an element from a binary search tree.
3. Search for a key element in a binary search tree.

Week 7: Write a C & Python program that uses recursive functions to traverse the given binary search tree in a) Preorder b) inorder and c) postorder.

Week 8: Write a C & Python program to perform the following operations

- ☐ Insertion into a B-tree
- ☐ Deletion from a B-tree

Week 9: Write a C & Python program to construct AVL tree and perform the following operation

- a) Insertion into an AVL-tree

Week 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

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

- a) Mergesort b) Heapsort

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

- i) Bubble sort ii) Selection sort
iv) Quick sort iv) Insertion sort

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

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN
2400BS61: APPLIED PHYSICS LAB

B.TECH I YEAR II SEMESTER

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Course Objectives

- To introduce the spirit of experiments to verify physics concepts such as energy band gap, photoelectric effect, Hall Effect and so on.
- To design, develop, characterized and study properties of materials, help the students to prepare new materials for various engineering applications.
- To perform experiments to estimate the device properties and check their suitability in science and technology.
- To teach and apply knowledge to measure and verify the values of certain constants in physics.

Course Outcomes: Upon graduation:

- Demonstrate the Understanding of the fundamental concepts or laws in physics by carrying out experimental procedure.
- Analyze the characteristics of optoelectronic devices.
- Report and predict the significance of experiments like energy band gap, Hall coefficient, and dielectric constant and Numerical aperture.
- Understanding the concept of magnetic induction.

List of Experiments

1. Energy gap of a PN junction diode.

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

2. Solar cell

To study the V-I characteristics of a give solar cell.

3. Light emitting diode

To study the V-I characteristics of a light emitting diode.

4. Stewart and Gee's experiment

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

5. Hall Effect experiment

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

6. Photoelectric effect

To determine the work function of a given material.

7. LASER diode

To study characteristics of laser diode.

8. Optical Fibre Numerical aperture

To determine the numerical aperture (NA) of the given optical fibre.

9. Optical Fibre bending loss

To determine the loss caused in optical fiber in dB due to macro bending of the fibre.

10. Determination of dielectric constant

To determine the dielectric constant of a capacitor by charging and discharging method.

Reference Books:

1. Practical physics by Dr. Aparna, Dr K.V Rao, V.G.S. Publications.
2. Applied physics practical lab manual – MRECW

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

2400MC01: ENVIRONMENTAL SCIENCE

B.TECH I YEAR II SEMESTER

L T P C
2 0 0 0

Course Objectives:

1. Understanding the importance of ecological balance for sustainable development.
2. Recognize , the significance of natural resources, their classifications. Alternative energy for the sustainability of the environment by appropriate maintance of natural resources.
3. Understand the biodiversity & type of biodiversity along with the value & conservation of biodiversity
4. Categorize, the type of environmental pollution & various treatment technologies for diminution of environmental pollutants summarize the global environmental issues
5. Understand the sustainable development concept & importance of green buildings , EIA, EIS, EMP.

Course Outcomes:

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

UNIT-I

Ecosystems: Definition, Scope, and Importance of ecosystem. Classification, structure, and function of an ecosystem, Food chains, food webs, and ecological pyramids. Flow of energy, Bio geo chemical 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 wild life, man-wild life conflicts; conservation of biodiversity: In-Situ and Ex-situ conservation. National Biodiversity act.

UNIT-IV

Environmental Pollution and Control Technologies: Environmental Pollution: Classification of pollution, **Air Pollution:** Primary and secondary pollutants, Automobile and Industrial pollution, Ambient air quality standards. **Water pollution:** Sources and 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.

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.

TEXTBOOKS:

1. Text book of Environmental Studies for Under graduate Courses by Erach Bharucha for University Grants Commission.
2. Environmental Studies by R. Rajagopalan, Oxford University Press.

REFERENCE BOOKS:

1. Environmental Science: towards a sustainable future by Richard T. Wright. 2008 PHI 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. Textbook of Environmental Science and Technology - Dr. M. Anji Reddy 2007, BS Publications.
6. Introduction to Environmental Science by Y. Anjaneyulu, BS. Publications.

MALLAREDDY ENGINEERING COLLEGE FOR WOMEN					
B.Tech. II Year II Sem		L	T	P	C
CYBER SECURITY ESSENTIALS		3	0	0	3

Course objectives:

1. To understand various types of cyber-attacks and cyber-crimes
2. To learn threats and risks within context of the cyber security
3. To have an overview of the cyber laws & concepts of cyber forensics
4. To study the defensive techniques against these attacks
5. To understand various cyber security privacy issues

Course Outcomes:

1. Analyze and evaluate the cyber security needs of an organization.
2. Understand Cyber Security Regulations and Roles of International Law.
3. Design and develop a security architecture for an organization.
4. Understand fundamental concepts of data privacy attacks

UNIT - I

Introduction to Cyber Security: Basic Cyber Security Concepts, layers of security, Vulnerability, threat,

Harmful acts, Internet Governance – Challenges and Constraints, Computer Criminals, CIA Triad, Assets and

Threat, motive of attackers, active attacks, passive attacks, Software attacks, hardware attacks, Cyber

Threats-Cyber Warfare, Cyber Crime, Cyber terrorism, Cyber Espionage, etc., Comprehensive Cyber

Security Policy.

UNIT - II

Cyberspace and the Law & Cyber Forensics: Introduction, Cyber Security Regulations, Roles of International Law. The INDIAN Cyberspace, National Cyber Security Policy.

Introduction, Historical background of Cyber forensics, Digital Forensics Science, The Need for Computer

Forensics, Cyber Forensics and Digital evidence, Forensics Analysis of Email, Digital Forensics Lifecycle,

Forensics Investigation, Challenges in Computer Forensics

UNIT - III

Cybercrime: Mobile and Wireless Devices: Introduction, Proliferation of Mobile and Wireless Devices,

Trends in Mobility, Credit card Frauds in Mobile and Wireless Computing Era, Security Challenges Posed by

Mobile Devices, Registry Settings for Mobile Devices, Authentication service Security, Attacks on

Mobile/Cell Phones, Organizational security Policies and Measures in Mobile Computing Era, Laptops.

UNIT- IV

Cyber Security: Organizational Implications: Introduction, cost of cybercrimes and IPR issues, web threats

for organizations, security and privacy implications, social media marketing: security risks and perils for

organizations, social computing and the associated challenges for organizations

UNIT - V

Privacy Issues: Basic Data Privacy Concepts: Fundamental Concepts, Data Privacy Attacks,

Data linking and

profiling, privacy policies and their specifications, privacy policy languages, privacy in different domainsmedical, financial, etc

TEXT BOOKS:

1. Nina Godbole and Sunit Belpure, Cyber Security Understanding Cyber Crimes, Computer Forensics and Legal Perspectives, Wiley

2. B.B. Gupta, D.P. Agrawal, Haoxiang Wang, Computer and Cyber Security: Principles, Algorithm, Applications, and Perspectives, CRC Press, ISBN 9780815371335,2018.

REFERENCE BOOKS:

1. Cyber Security Essentials, James Graham, Richard Howard and Ryan Otson, CRC Press.

2. Introduction to Cyber Security, Chwan-Hwa(john) Wu,J. David Irwin, CRC Press T&F Group.

MALLAREDDY ENGINEERING COLLEGE FOR WOMEN					
B.Tech. II Year I Sem		L	T	P	C
COMPUTER ORGANIZATION AND OPERATING SYSTEMS		3	0	0	3

Course Objectives:

The main objectives of the course are:

1. To have a thorough understanding of the basic structure and operation of a digital computer.
2. To discuss in detail the operation of the arithmetic unit including the algorithms & implementation of fixed-point and floating-point addition, subtraction, multiplication & division.
3. To study the different ways of communicating with I/O devices and standard I/O interfaces.
4. To study the hierarchical memory system including cache memories and virtual memory.
5. To demonstrate the knowledge of functions of operating system memory management scheduling, file system and interface, distributed systems, security and deadlocks.
6. To implement a significant portion of an Operating System.

Course Outcomes:

Upon completion of the Course, the students will be able to:

1. Basic structure of a digital computer
2. Arithmetic operations of binary numbers system
3. The organization of the Control Unit, Arithmetic and Logical Unit, Memory Unit and the I/O unit.
4. Operating system functions, types, system calls.
5. Memory management techniques and dead lock avoidance
6. Operating system file system and implementation and its interface.

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.

Register Transfer Language and Micro Operations: Register Transfer Language, Register Transfer Bus and Memory Transfers, Arithmetic Micro Operations, 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- II:

Micro Programmed Control: Control Memory, Address Sequencing, Micro-program Examples, Design of Control Unit, Hard Wired Control, Micro-programmed Control.

The Memory System: Basic Concepts of Semiconductor RAM Memories, Read-Only Memories, Cache Memories Performance Considerations, Virtual Memories secondary Storage, Introduction to RAID.

UNIT-III:

Input-Output Organization: Peripheral Devices, Input-Output Interface, Asynchronous Data Transfer Modes, Priority Interrupt, Direct Memory Access, Input-Output Processor (IOP), Serial Communication; Introduction to Peripheral Components, Interconnect (PCI) Bus, Introduction to Standard Serial Communication Protocols like RS232, USB, IEEE1394.

UNIT- IV:

Operating Systems Overview: Overview of Computer Operating Systems Functions, Operating Systems Structures- Systems Calls, System Programs **Process Management:** Process, Process States, Process Control Block, CPU Scheduling Algorithms **Memory Management:** Swapping, Contiguous Memory Allocation, Paging, Structure of the Page Table, Segmentation, Virtual Memory, Demand Paging, Page-Replacement Algorithms, Allocation of Frames, Thrashing

UNIT-V:

Principles of Deadlock: System Model, Deadlock Characterization, Deadlock Prevention, Detection and Avoidance, Recovery from Deadlock.

File System Interface: The Concept of a File, Access Methods, Directory Structure, File System Mounting, File Sharing, Protection.

TEXTBOOKS:

1. Computer Organization - Carl Hamacher, Zvonks Vranesic, Safea Zaky, 5th Edition, McGraw Hill.
2. Computer System Architecture - M. Moris Mano, 3rd edition, Pearson

REFERENCE BOOKS:

1. Computer Organization and Architecture - William Stallings 6th Edition, Pearson
2. Operating System Concepts - Abraham Silberchatz, Peter B. Galvin, Greg Gagne, 8th Edition, John Wiley.
3. Structured Computer Organization - Andrew S. Tanenbaum, 4th Edition, PHI
4. Operating Systems - Internals and Design Principles, Stallings, 6th Edition - 2009, Pearson Education.
5. Modern Operating Systems, Andrew S Tanenbaum 2nd Edition, PHI
6. Principles of Operating System, B.L. Stuart, Cengage Learning, India Edition.

MALLAREDDY ENGINEERING COLLEGE FOR WOMEN					
B.Tech. II Year I Sem		L	T	P	C
DATABASE MANAGEMENT SYSTEMS		3	0	0	3

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 Databases..

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

UNIT–

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

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

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

UNIT–V: Storage and Indexing: Overview of

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

TEXTBOOKS:

1. Database Management Systems, Raghu Ramakrishnan, Johannes Gehrke, McGraw Hill Education (India) Private Limited, 3rd Edition. (Part of UNIT-I, UNIT-II, UNIT-III, UNIT-V)
2. Database System Concepts, A. Silberschatz, Henry F. Korth, S. Sudarshan, McGraw Hill Education (India) Private Limited, 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.

MALLAREDDY ENGINEERING COLLEGE FOR WOMEN					
B.Tech.II Year I Sem		L	T	P	C
DISCRETE MATHEMATICS		3	0	0	4

Course Objectives:

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

Course Outcomes:

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

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

UNIT-I

Propositional Logic: Syntax, Semantics, Validity and Satisfiability, Basic Connectives and Truth Tables, Logical Equivalence: The Laws of Logic, Logical Implication, Rules of Inference, Normal Forms, Disjunctive and Conjunctive Normal Form, The use of Quantifiers.

UNIT-II

Sets, Relation and Function: Operations and Laws of Sets, Cartesian Products, Binary Relation, Partial Ordering Relation, Equivalence Relation, Image of a Set, Sum and Product of Functions, Bijective functions, Inverse and Composite Function, Size of a Set, Finite and infinite Sets, Countable and uncountable Sets.

Principles of Mathematical Induction: The Well-Ordering Principle, Recursive definition, The Division algorithm: Prime Numbers, The Greatest Common Divisor: Euclidean Algorithm, The Fundamental Theorem of Arithmetic.

UNIT-III

Algebraic Structures and Morphism: Algebraic Structures with one Binary Operation, Semi Groups, Monoids, Groups, Congruence Relation and Quotient Structures, Free and Cyclic

Monoids and Groups, Permutation Groups, Substructures, Normal Subgroups, Algebraic

Structures with two Binary Operation, Rings, Integral Domain and Fields. Boolean Algebra and Boolean Ring, Identities of Boolean Algebra, Duality, Representation of Boolean Function.

UNIT-IV

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

UNIT-V

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

TEXTBOOKS:

3. Kenneth H. Rosen, Discrete Mathematics and its Applications, Tata McGraw-Hill
4. Susanna S. Epp, Discrete Mathematics with Applications, 4th edition, Wadsworth Publishing Co. Inc.
5. C L Liu and D P Mohapatra, Elements of Discrete Mathematics A Computer Oriented Approach, 3rd Edition by, Tata McGraw-Hill.

REFERENCE BOOKS:

6. J.P. Tremblay and R. Manohar, "Discrete Mathematical Structure and its Application to Computer Science", TMG Edition, Tata McGraw-Hill
7. Norman L. Biggs, Discrete Mathematics, 2nd Edition, Oxford University Press. Schaum's Outlines Series, Seymour Lipschutz, Marc Lipson,
8. Discrete Mathematics, Tata McGraw-Hill

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN					
B.Tech.II Year I Sem		L	T	P	C
COMPUTER NETWORKS		3	0	0	3

Course Objectives:

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

Course Outcomes:

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

UNIT-I

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

UNIT-II

Data link layer: Introduction, Framing, and Error – Detection and Correction – Parity – LRC – CRC Hamming code, Flow and Error Control, Noiseless Channels, Noisy Channels, HDLC, Point to Point Protocols. 11 Medium Access sub layer: ALOHA, CSMA/CD, LAN – Ethernet IEEE 802.3, IEEE 802.5 – IEEE 802.11, Random access, Controlled access

UNIT-III

Network layer: Logical Addressing, Internet networking, Tunneling, Address mapping, ICMP, IGMP, Forwarding, Uni-Cast Routing Protocols, Multicast Routing Protocols.

UNIT-IV

Transport Layer: Process to Process Delivery, UDP and TCP protocols, Data Traffic, Congestion

on, Congestion Control, QoS, Integrated Services, Differentiated Services, QoS in Switched Networks.

UNIT-V

Application Layer: Domain namespace, DNS in internet, electronic mail, SMTP, FTP, WWW, HTTP, SNMP, **Security–PGP -SSH**

TEXTBOOKS:

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

REFERENCES:

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

MALLAREDDY ENGINEERING COLLEGE FOR WOMEN					
B.Tech. II Year I Sem		L	T	P	C
DATABASE MANAGEMENT SYSTEMS LAB		0	0	3	1.5

Course Objectives:

Students will have the ability to:

- Keep abreast of current developments to continue their own professional development.
- To engage themselves in lifelong learning of Database management systems theories and technologies to enable them to pursue higher studies.
- To interact professionally with colleagues or clients located abroad and the ability to overcome challenges that arises from geographic distance, cultural differences, and multiple languages in the context of computing.
- Develop team spirit, effective work habits, and professional attitude in written and oral forms, towards the development of database applications

Course Outcomes:

Students will be able to demonstrate their skills

- In drawing the ER, EER, and UML Diagrams.
- In analyzing the business requirements and producing a viable model for the implementation of the database.
- In converting the entity-relationship diagrams into relational tables.
- To develop appropriate Database 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" for 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:

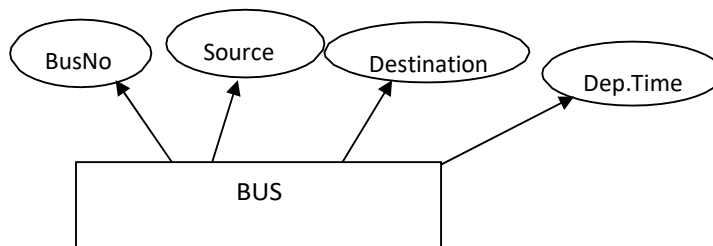
1. Reservation
2. Cancellation

PRIMARY KEY ATTRIBUTES:

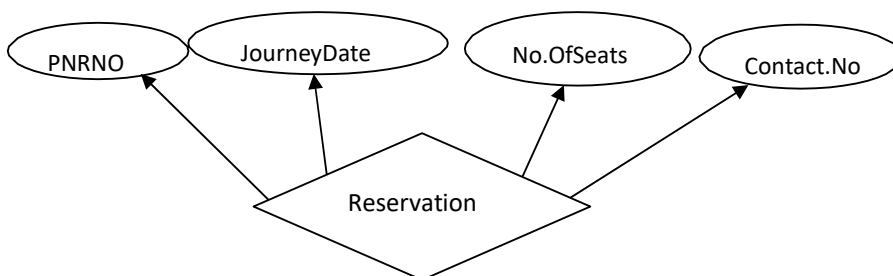
1. TicketID (Ticket Entity)
2. PassportID (Passenger Entity)
3. Bus_NO (Bus Entity)

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

Ex: BusEntity



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 command 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 manage data within schema objects. Some examples:

- SELECT-retrieve data from the database
- INSERT-insert data into a table
- UPDATE-update 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, 'hyderabad', 'Bangalore'); Insert into Bus values (23, 'hyderabad', 'Kolkata'); Insert into Bus values (45, 'Tirupathi', 'Bangalore'); Insert into Bus values (34, 'hyderabad', '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 BusNo=1 WHERE BUSNO=2;

Experiment 4: Querying

In this week you are going to practice queries (along with subqueries) using ANY, ALL, IN, EXISTS, NOT EXISTS, UNION, INTERSECT, Constraint 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 end with 'h'. Find the names of passengers whose age is between 30 and 45.

Display all the passengers names beginning with 'A' Display the sorted list of passengers names

Experiment 5: Aggregate Functions and Number Functions, Nested Query and Co-related Queries

You are going to practice queries using Aggregate functions and number functions (COUNT, SUM, AVG, and MAX and MIN), GROUP BY, HAVING and Creation and dropping of Views. Write a Query to display the Information present in the Passenger and cancellation tables. Hint: Use UNION Operator.

Display the number of days in a week on which the 9W01 bus is available.

Find number of tickets booked for each PNR_no using GROUP BY CLAUSE. Hint: Use GROUP BY on PNR_No.

Find the distinct PNR numbers that are present.

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

Find the total number of cancelled seats.

Nested Query and Co-related Queries

Use the tables sailors, reserves, boats for implementing the following

Sailors(sid:integer,sname:string,rating:integer,age:real);

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

- Find the names of sailors who have reserved boat 103
- 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 Rupdcheck BEFORE UPDATE ON passenger

IF NEW.Ticketno > 60 THEN SET

New.Ticketno = Ticketno; ELSE SET New.Ticketno = 0; ENDIF; 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;
  OPEN cl;
  FETCH cl
```

```
INTO v_id, v_name;
  CLOSE cl;
END
```

```
Table: BUS
```

```
PK (Primary key) Source: Varchar Destination:
```

```
Varchar Dept Time: Varchar Passenger
```

```
PPNO: Varchar(15):
```

```
PK Name:
```

```
Varchar(15) Age: int(4) Sex: Char(10): Male/Female Address: Varchar(20)
```

Passenger_Tickets

```
PPNO: Varchar(15): 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	<u>PassportID</u>
Passport_id	Ticket_id			

You can do these second and third normal forms if required. And how Normalized tables 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 a table under employee database as below.

Net_salary

Gross_salar

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, savepoint, 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. Develop a query to grant all privileges of employee table into department table
2. Develop a query to grant some privileges of employee table into department table
3. Develop a query to revoke all privileges of employee table from department table
4. Develop a query to revoke some privileges of employee table from department table
5. Write a query to implement the savepoint
6. Write a query to implement the commit
7. Write a query to implement the rollback

Reference Books:

1. Introduction to SQL, Rick F. VanderLans, Pearson Education..
2. Oracle PL/SQL, B. Rosenzweig and E. Silvestrova, Pearson Education.
3. Oracle PL/SQL Programming, Steven Feuerstein, SPD.
4. SQL & PL/SQL for Oracle 10g, Black Book, Dr. P. S. Deshpande, Dream Tech
5. Oracle Database 11g PL/SQL Programming, M. McLaughlin, TMH
6. SQL Fundamentals, J. J. Patrick, Pearson Education

B.Tech.II Year I Sem					
COMPUTER NETWORKS LAB		L	T	P	C
		0	0	3	1.5

Course Objectives:

- ✓ To understand the functionalities of various layers of OSI model
- ✓ To understand the operating system functionalities

Course Outcomes:

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

System/Software Requirement

Intel based desktop PCs LAN CONNECTED

with minimum of 166 MHz or faster processor with at least 64 MB RAM and 100 MB free disk space

Computer Networks Lab:

1. Implement the data link layer framing methods such as character, character stuffing, and bit stuffing.
2. Implement on a data set of characters the three CRC polynomials – CRC12, CRC16 and CRC.
3. Implement Stop and wait protocol.
4. Implement Dijkstra's algorithm to compute the Shortest path through a graph.
5. Take an example subnet graph with weights indicating delay between nodes. Now obtain Routing table at each node using distance vector routing algorithm
6. To implement Open Shortest Path First (OSPF) Routing Protocol
7. Take a 64 bit playing text and encrypt the same using DES algorithm
8. Using RSA algorithm encrypt text data and Decrypt the same.

MALLAREDDY ENGINEERING COLLEGE FOR WOMEN					
B.Tech. II Year I Sem		L	T	P	C
HUMAN VALUES AND PROFESSIONAL ETHICS		2	0	0	0

Course Objective:

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

Course Outcome:

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

UNIT- I:

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

UNIT-II:

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

Professional Practices in Engineering: Work Place Rights & Responsibilities, Professions and Norms of Professional Conduct, Norms of Professional Conduct vs. Profession; Responsibilities, Obligations and Moral Values in Professional Ethics, Professional codes of Ethics, the limits of predictability and responsibilities of the engineering profession. Central Responsibilities of Engineers – The Centrality of Responsibilities of Professional Ethics; lessons from 1979 American Airlines DC-10 Crash and Kansas City Hyatt Regency Walkaway 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.

TEXTBOOKS:

1. R. R. Gaur, R Sangal, GP 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 Press 2015.

REFERENCE BOOKS:

1. Prof. K. V. Subba Raju, 2013, Success Secrets for Engineering Students, Smart Student Publications, 3rd Edition.
2. Ivan Illich, 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

MALLAREDDY ENGINEERING COLLEGE FOR WOMEN					
B.Tech. II Year II Sem		L	T	P	C
PROBABILITY AND STATISTICS		3	1	0	4

Course Objectives:

- A random variable that describes randomness or an uncertainty in certain realistic situation. It can be of either discrete or continuous type. Study of the Binomial and the Poisson random variables and the Normal random variable and their probability distributions. Important statistical properties for these random variables provide every good insight and are essential for industrial applications.
- The types of sampling, Sampling distribution of means, Sampling distribution of variance, Estimation of statistical parameters.
- Testing of hypothesis for large samples of few unknown statistical parameters.
- Testing of hypothesis for large samples of few unknown statistical parameters.
- Estimate relation between the functionally related data using method of least squares. Estimate correlation coefficient and coefficient of regression of the given data.

Course Outcomes:

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

- Distinguish between random variables pertaining to discrete/ continuous distribution systems and apply the discrete distributions like Binomial and Poisson and continuous distribution like Normal and their properties.
- 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.
- Examine statistical hypothesis for large samples.
- Examine statistical hypothesis for small samples.
- Establish relationship between functionally related data and up to what extent they are correlated using correlation coefficient and coefficient of regression of the given data.

UNIT-I

L-10

Single Random Variable and Probability Distributions:

Random Variables: Discrete and Continuous, Discrete Probability distributions: Binomial and Poisson distributions and their properties. (Without proof)

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

UNIT-II

L-9

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-III

L-9

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

Large sample tests:

- vii. Test of Equality of means of two sample equality of sample mean and population mean (cases of known variance & unknown variance, equal and unequal variances)

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

UNIT-IV

L-10

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 its properties. Test of equality of two population variances. Chi-square distribution, its properties, Chi-square test of goodness of fit.

UNIT-V

L-10

Curve Fitting: Curve fitting by the method of least squares - fitting of straight line, parabola and exponential curves.

Correlation and Regression:

Correlation: Coefficient of correlation, Rank correlation (Karl Pearson's coefficient of correlation, Spearman's coefficient of correlation). Regression: Regression coefficient, lines of regression.

TEXTBOOKS:

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.

REFERENCE BOOKS:

7. Mathematics for Engineers by K. B. Datta and M. S. Sriniva, Cengage Publications.
8. Fundamentals of Mathematical Statistics by S. C. Gupta and V. K. Kapoor.
9. Veerajan T., Engineering Mathematics (for semester III), Tata McGraw-Hill, New Delhi, 2010.
- P. G. Hoel, S. C. Portant C. J. Stone, Introduction to Probability theory, Universal Book Stall, 2003

MALLAREDDY ENGINEERING COLLEGE FOR WOMEN					
B.Tech. II Year II Sem		L	T	P	C
MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS		3	1	0	3

Course Objectives:

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

Course Outcomes:

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

UNIT I

Introduction & Demand Analysis: Definition, Nature and Scope of Managerial Economics. Demand Analysis: Demand Determinants, Law of Demand and its exceptions. Elasticity of Demand: Definition, Types, Measurement and Significance of Elasticity of Demand. Demand Forecasting, Factors governing demand forecasting, methods of demand forecasting.

UNIT II

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

UNIT III

Markets & New Economic Environment: Types of competition and Markets, Features of Perfect competition, Monopoly and Monopolistic Competition. Pricing: Objectives and Policies of Pricing. Methods of Pricing. Business: Features and evaluation of different forms 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.

TEXTBOOKS:

2. Varshney & Maheswari: Managerial Economics, Sultan Chand, 2009.
3. S.A. Siddiqui & A.S. Siddiqui, Managerial Economics and Financial Analysis, New Age International Publishers, Hyderabad 2013.
13. M. Kasi Reddy & Saraswathi, Managerial Economics and Financial Analysis, PHI New Delhi, 2012.

REFERENCES:

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

MALLAREDDY ENGINEERING COLLEGE FOR WOMEN					
B.Tech. II Year II Sem		L	T	P	C
Applied Cryptography		3	0	0	4

Course Objective

The course provides an overview of the various encryption techniques, how to use them to protect the data.

Course Outcome:

1. Understand basic encryption methods and algorithms, their strengths and weaknesses of encryption algorithms
2. Understand encryption key exchange and management
3. Understand how to deploy encryption techniques to secure data stored on computer systems
4. Understand how to deploy encryption techniques to secure data in transit across data networks and also to demonstrate best practice deployment of cryptographically technologies

UNIT I

History and overview of cryptography, Classical Encryption Techniques: Symmetric Cipher Model, Substitution Techniques, Transposition Techniques, Rotor Machines, And Steganography

UNIT II

Stream Ciphers and Block Ciphers, Attacks on block ciphers, Block Cipher Principles, The Data Encryption Standard (DES), Block Cipher Design Principles, Group, Rings, Field, Polynomial Arithmetic, The Euclidean Algorithm, Finite Fields of the Form $GF(2^n)$

UNIT III

Advanced Encryption Standard (AES), Stream Ciphers, RC4, The Chinese Remainder Theorem, Public Key Cryptography and RSA Algorithm, Diffie-Hellman Key Exchange, Elliptic Curve Cryptography.

UNIT IV

Cryptographic Hash Functions: Application of Cryptographic Hash Functions, Two Simple Hash Functions, Requirements and Security, Secure Hash Algorithm (SHA), SHA-3.

UNIT V

Introduction to Block Chain, Bitcoin basics, Smart Contracts, Blockchain development platforms and APIs, Blockchain Ecosystems, Ethereum, Distributed Consensus, Blockchain Applications

TEXTBOOKS/REFERENCES

- 1) Stallings, William. Cryptography and network security, Principle and Practice. Pearson Education India, 2017.
- 2) R. Stinson Cryptography, Theory and Practice (Fourth Edition)

Malla Reddy Engineering College for Women (Autonomous Institution)
 3) Handbook of Applied Cryptography, by A. Meyer, S. P. Van Oorschot, S. Vanstone. Page 80
 Melanie Swan, Blockchain, Blueprint for a new Economy, O'Reilly

MALLAREDDY ENGINEERING COLLEGE FOR WOMEN					
B.Tech. II Year II Sem		L	T	P	C
CYBER LAWS AND IT SECURITY		3	0	0	3

Course Objectives:

The course is aimed at

1. Apply methods for authentication, access control, intrusion detection and prevention.
2. Identify and mitigate software security vulnerabilities in existing systems.

Course Outcomes:

At the end of the course the students should be able to:

1. The student is able to understand the cyber laws with reference to information technology act.
2. Understanding the essentials and procedure related to E-commerce and E-Governance transactions.
3. The student is able to know various aspects of cyber-crime.
4. The student is able to know about information security and able to do risk analysis and risk management towards security.

UNIT-1

Fundamentals of Cyber Law , Introduction on cyber space , Jurisprudence of Cyber Law , Scope of Cyber Law , Cyber law in India with special reference to Information Technology Act, 2000 (as amended) and Information Technology Act, 2008.

UNIT-2

E-Governance and E-Commerce, Electronic Governance, Procedures in India, Essentials & System of Digital Signatures , The Role and Function of Certifying Authorities , Electronic contracts, UNCITRAL Model law on Electronic Commerce, Cryptography – Encryption and decryption.

UNIT-3

Cyber Crimes Investigation, Investigation related issues, Issues relating to Jurisdiction, Relevant provisions under Information Technology Act, Evidence Act, Indian Penal Code.

UNIT-4

Overview of Information Security - What is Information and why should be protect it? - Information Security - Threats - Frauds, Thefts, Malicious Hackers, Malicious Code, Denial-of-Services Attacks and Social Engineering - Vulnerability – Types - Risk – an introduction - Business Requirements - Information Security Definitions - Security Policies - Tier1 (Origination-Level), Tier2 (Function Level), Tier3 (Application/Device Level) – Procedures - Standards – Guidelines.

UNIT-5

Risk Analysis & Risk Management - Risk Analysis Process - Asset Definition - Threat Identification - Determine Probability of Occurrence - Determine the Impact of the Threat - Controls Recommended - Risk Mitigation - Control Types/Categories - Cost/Benefit Analysis

Access Control - User Identity and Access Management - Account Authorization - Access and Privilege Management - System and Network Access Control - Operating Systems Access Controls - Monitoring Systems Access Controls - Intrusion Detection System - Event Logging - Cryptography.

TEXTBOOKS

1. Cyber Attacks & Cyberlaw Kindle Edition By Dr. Pavan Duggal
2. Kumar K - Cyber Laws: Intellectual Property & E Commerce, Security, Dominant Publisher
3. Information Security Policy & Implementation Issues, NIIT, PHI
4. Sunit Belapure and Nina Godbole, Cyber Security: Understanding Cyber Crimes, Computer Forensics And Legal Perspectives, Wiley India Pvt. Ltd, 2011.
5. Mark F Grady, Francesco Parisi, "The Law and Economics of Cyber Security", Cambridge University Press, 2006

REFERENCE BOOK:

1. Mark Stamp, Information Security: Principles and Practice, John Wiley and Sons
2. Marine R.C. - Cyber Crime Impact in the New Millennium, Author Press
3. Jonathan Rosenoer, "Cyber Law: The law of the Internet", Springer Verlag 1997.

MALLAREDDY ENGINEERING COLLEGE FOR WOMEN					
B.Tech. II Year II Sem		L	T	P	C
OBJECT ORIENTED PROGRAMMING THROUGH JAVA		3	0	0	3

Course Objective:

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

Course Outcomes:

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

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

UNIT-I

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

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

block scope, conditional statements, loops, break and continue statements, simple java stand alone 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 exceptions subclasses.

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

UNIT-IV

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

Other Utilities - Scanner, StringTokenizer, 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, Lifecycle of an applet and Passing parameters to applets

GUI Programming - Swing -The AWT class hierarchy, Introduction to Swing, Swing Vs AWT, Hierarchy for Swing components, Overview of Swing components –

JButton, JLabel, JTextField, JCheckBox, RadioButton, JTextArea, etc simple Swing applications, Layout managers – FlowLayout, BorderLayout, GridLayout and GridBagLayout.

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

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

REFERENCE BOOKS:

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					
B.Tech.II Year II Sem		L	T	P	C
Applied Cryptography Lab		0	0	3	1.5

LIST OF PRACTICAL EXPERIMENTS

1. Write a program take text file as an input and print word, character count and ascii value of each characters as output. (Hint: Use `open()`, `read()` and `split()`).
2. Write an encryption program: Input: computer science engineering mrecw Output: gsqtyxivwgmirgiirkmriivmrkwvqyrmzivwmx Hint: key=4 (play with ascii value).
3. Raju send an encrypted message (cipher text) "PHHW PH DIWHU WKH WRJD SDUWB" to Rani. Can you build decryption process and find out what is the message (plaintext) send to Rani? Hint: try all keys.
4. Raju sends encrypted message "ZICVTWQNGKZEIIGASXSTSLVWLA" to Rani. Can you build decryption process and find out what is the message send to Rani. Hint: try all keys for each character.
5. Kohli have plain text "we wish to replace player". Can you build encryption process and find out what is the cipher text he needs send to BCCI. Help him out by using monoalphabetic cipher. Hint: use any one-to-one mapping between alphabets. One to one mapping

ABCDEF G H I J

KLMNOPQRSTUVWXYZ ANDREWICKSOHTBFGJLMPQU VX YZ

6. Kohli sent encrypted message (Cipher text) "SEEMSEAOMEDSAMHL" to Anushka. Can you build decryption process and find out what is the message (plain text) send to Anushka. Hint: use above one to one mapping between alphabets.
7. Raju wants to build encrypted and decryption algorithms of Playfair Cipher. Help him to build a key matrix using the key "mrecw autonomous"
8. By using key "CBDE" Raju would like send message (plain text) "HELLO WORLD" to Rani. Can you build encryption process and find out what is the encrypted message (cipher text) to Raju by using Hill Cipher. Also Can you build decryption process and find out what is the decrypted message (plain text) of cipher text "SLHZYATGZT" by using Hill Cipher.
9. Implementation of Encryption and Decryption of Vigenère Cipher keyword deceptive Key: deceptive deceptive deceptive

Plaintext: we are discovered save yourself

Cipher text: ZICVTWQNGRZGVTWAVZHCQYGLMGJ

10. Implementation of AES encryption and decryption

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11. Implementation of Simplified DES Encryption and decryption
 12. Implementation of RC4
 13. Implementation of RSA Algorithm
 14. Implementation of Diffie-Hellman key exchanges
 15. Implement the Euclidean Algorithm for integers and polynomials.
 16. Implement AES Key Expansion

MALLAREDDY ENGINEERING COLLEGE FOR WOMEN					
B.Tech. II Year II Sem		L	T	P	C
OBJECT ORIENTED PROGRAMMING THROUGH JAVALAB		0	0	3	1.5

Course Objectives:

- To prepare students to become familiar with the standard Java technologies of J2SE
- To prepare students to excel in Object Oriented programming and to succeed as a Java Developer through global rigorous education.
- To provide students with a solid foundation in OOP fundamentals required to solve programming problems and also to learn Advanced Java topics like J2ME, J2EE, JSP and JavaScript
- To train students with good OOP programming breadth so as to comprehend, analyze, design and create novel products and solutions for the real life problems.
- To inculcate in students professional and ethical attitude, multidisciplinary approach and 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 window applications both for standalone and Applets program

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

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

Week 2: a) Write a Java program for Method overloading and Constructor overloading.

b) Write a Java program to display the employee details using Scanner class.

c) Write a Java program that checks whether a given string is a palindrome or not.

Week3:a)WriteajavaprogramtorepresentAbstractclasswithexample.
b)WriteajavaprogramtoimplementInterfaceusingextendskeyword.

Week4:a)Writeajavaprogramtocreateuserdefinedpackage.

Week5:a)Writeajavaprogramtocreateinnerclasses.

- b) Writeajavaprogramforcreatingmultiplecatchblocks.
- c) WriteaJavaProgramforcreatingUser DefinedException.

Week6:a)

WriteajavaprogramforproducerandconsumerproblemusingThreads.b)WriteaJavaprogramthatimpleme
ntsamulti-threadapplicationthathas threethreads.

Week7:a)Writeajavaprogramtoimplementallfileoperations.

b)WriteaJavaProgramtolistallthefilesinadirectoryincludingthefilesresentinallits subdirectories.

Week8:a)WriteajavaprogramtorepresentArrayListclass.

b) WriteaJavaprogramloadspnoneno,namefromatextfileusingHashtable.

Week9: a) Writeanappletprogramthatdisplaysasimplemessage.

b)WriteaJavaprogramcomputefactorialvalueusingApplet.

c) WriteaprogramforpassingparametersusingApplet.

Week10: Writeajavaprogramfor handling MouseeventsandKeyevents

Week11:Writeajavaprogramthatworksasasimplecalculator.UseaGridLayoutarrangeButtonsfordigi
tsandforthe+- *%operations.Addatextfieldtodisplaytheresult.

TEXTBOOK/REFERENCEBOOKS:

1. JavaFundamentals–
AComprehensiveIntroduction,HerbertSchildtandDaleSkrien,TMH.
2. JavaforProgrammers,P.J.DeitelandH.M.Deitel,PEA(or)Java:HowtoProgram
,P.J.DeitelandH.M.Deitel,P

MALLAREDDYENGINEERINGCOLLEGEFORWOMEN					
B.Tech. II Year II Sem		L	T	P	C
INDIAN CONSTITUTION*	2	2	0	0	0

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:

3. D.D. Basu, Introduction to the Constitution of India, Lexis Nexis, 2015
- ‘India nAdministration’ by Avasti and Avasti