BACHELOR OF TECHNOLOGY

Computer Science and Engineering

(AI & ML)

COURSE STRUCTURE

(Batches admitted from the Academic Year 2022 -2023)

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(Autonomous Institution-UGC, Govt. of India)

Accredited by NBA & NAAC with 'A' Grade, UGC, Govt. of India
NIRF Indian Ranking–2020, Accepted by MHRD, Govt. of India
Permanently Affiliated to JNTUH, Approved by AICTE, ISO 9001:2015 Certified Institution
AAAA+ Rated by Digital Learning Magazine, AAA+ Rated by Careers 360 Magazine
3rd Rank CSR, Platinum Rated by AICTE-CII Survey, Top 100 Rank band by ARIIA, MHRD, Govt. of India
National Ranking-Top 100 Rank band by Outlook, National Ranking-Top 100 Rank band by Times News Magazine
Maisammaguda, Dhullapally, Secunderabad, Kompally-500100

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Magazine, AAA+ Rated by Careers 360 Magazine 3rd Rank CSR,Platinum Rated by AICTE-CII Survey,
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National Ranking-Top 100 Rank band by Times News Magazine

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

S. No	Course code	Subject	L	T	P	C	Max. Marks	
							INT	EXT
1	2200BS01	Linear Algebra and Differential Equations	3	1	0	4	40	60
2	2205ES01	Programming for Problem Solving	3	0	0	3	40	60
3	2202ES01	Basic Electrical Engineering	3	1	0	4	40	60
4	2200BS0	Engineering Chemistry	3	0	0	3	40	60
5	2205ES61	Programming for Problem Solving Lab	0	0	3	1.5	40	60
6	2202ES61	Basic Electrical Engineering Lab	0	0	2	1	40	60
7	2200BS6	Chemistry Lab	0	0	2	1	40	60
8		Engineering Workshop	1	0	3	2.5	40	60
9	2200MC01	Environmental Science*	1	0	0	0	100	0
10		Induction Programme						
		TOTAL	14	2	10	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	2200BS0	Advanced Calculus and Transform Techniques	3	1	0	4	40	60
2	2205ES02	Python Programming	3	0	0	3	40	60
3	2200HS01	English Language & Communication Skills	2	0	0	2	40	60
4	2200BS05	Applied Physics	3	1	0	4	40	60
5	2203ES01	Computer Aided Engineering Graphics	1	0	4	3	40	60
6	2205ES62	Python Programming Lab	0	0	3	1.5	40	60
7	2200HS61	English Language & Communication Skills Lab	0	0	2	1	40	60
8	2200BS61	Applied Physics Lab	0	0	3	1.5	40	60
9	2200MC02	French Language*	2	0	0	0	100	0
		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	Max. Marks EXT
1	2205PC	Theory Of Computation	3	1	0	4	40	60
2	2204ES01	Analog and Digital Electronic Circuit	3	0	0	3	40	60
3	2205PC01	Data Structures and Algorithms	3	0	0	3	40	60
4	2205PC03	Discrete Mathematics	3	0	0	3	40	60
6	2205PC04	Object Oriented Programming through Java	3	0	0	3	40	60
7	2205PC61	Data Structures and Algorithms Lab	0	0	3	1.5	40	60
8	2205PC63	Object Oriented Programming through Java Lab	0	0	3	1.5	40	60
9	2266PR01	Innovative Product Development-I	0	0	2	1	40	60
10	2200MC03	Human Values and Professional Ethics*	2	0	0	0	100	0
		TOTAL	**17**	**1**	**8**	**20**	**420**	**480**

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

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

S. No	Course code	Subject	L	T	P	C	Max. Marks INT	Max. Marks EXT
1	2200HS03	Managerial Economics and Financial Analysis	3	0	0	3	40	60
2	2200BS04	Probability & Statistics	3	0	0	3	40	60
3	2266PC01	Artificial Intelligence	3	0	0	3	40	60
4	2205PC10	Design and Analysis of Algorithms	3	1	0	4	40	60
5	2205PC08	Database Management Systems	3	0	0	3	40	60
6	2266PC61	Artificial Intelligence Lab	0	0	3	1.5	40	60
7	2205PC64	Database Management Systems Lab	0	0	3	1.5	40	60
8	2266PR02	Innovative Product Development-II	0	0	2	1	40	60
9	2200MC04	Indian Constitution *	2	0	0	0	100	0
		TOTAL	**17**	**1**	**8**	**20**	**420**	**480**

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

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

S. No	Course code	Subject	L	T	P	C	Max.Marks	
							INT	EXT
1	2200HS04	Management Science	3	0	0	3	40	60
2	2266PC02	**Data Analytics**	3	1	0	4	40	60
3	2205PC11	Computer Networks	3	0	0	3	40	60
4		Professional Elective-1	3	0	0	3	40	60
5		Open Elective-1	3	0	0	3	40	60
6	2266PC62	**Data Analytics Lab**	0	0	3	1.5	40	60
7	2205PC66	Computer Networks Lab	0	0	3	1.5	40	60
8	2266PR03	Innovative Product Development -III	0	0	2	1	40	60
9	2200MC05	Technical Communications and Soft Skills*	2	0	0	0	100	0
		TOTAL	**17**	**1**	**8**	**20**		

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	2200HS02	Professional English	3	0	0	3	40	60
3	2266PC03	Machine Learning	3	0	0	3	40	60
4	2212PC02	Full Stack Development	3	1	0	4	40	60
5		Professional Elective - 2	3	0	0	3	40	60
6		Open Elective - 2	3	0	0	3	40	60
7	2266PC63	Machine Learning Lab	0	0	3	1.5	40	60
8	2212PC62	Full Stack Development Lab	0	0	3	1.5	40	60
9	2266PR04	Innovative Product Development -4	0	0	2	1	40	60
9	2200MC06	Indian Tradition Knowledge *	2	0	0	0	100	0
		TOTAL	**17**	**1**	**8**	**20**		

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	2266PC04	Natural Language Processing	3	0	0	3	40	60
2	2266PC05	Deep Learning	3	0	0	3	40	60
3		Professional Elective -3	3	0	0	3	40	60
4		Professional Elective -4	3	0	0	3	40	60
5		Open Electives-3	3	0	0	3	40	60
6	2266PC65	Deep Learning Lab	0	0	2	1	40	60
7	2266PC64	Natural Language Processing Lab	0	0	2	1	40	60
8	2266PR05	Innovative Product Development -5	0	0	2	1	40	60
9	2266PR06	Industry Oriented Mini Project / Internship	0	0	2	1	40	60
10	2266PR07	Project-I	0	0	2	1	40	60
11	2200MC07	Gender Sensitization*	2	0	0	0	100	0
		TOTAL	17	0	10	20	500	600

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

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

S. No	Course code	Subject	L	T	P	C	Max. Marks	
							INT	EXT
1		Professional Elective -5	3	0	0	3	40	60
2		Professional Elective -6	3	0	0	3	40	60
3		Open Electives-4	3	0	0	3	40	60
4	2266PR08	Technical Seminar	2	0	0	2	100	0
5	2266PR09	Innovation Startup & Entrepreneurship	0	0	12	6	40	60
6	2266PR10	Project-II	0	0	6	3	40	60
		TOTAL	11	0	18	20	300	300

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

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PROFESSIONAL ELECTIVES

PROFESSIONAL ELECTIVES					
Professional Elective -I		**Professional Elective -II**		**Professional Elective -III**	
2205PE01	Artificial Neural Networks	2205PE04	Mobile Computing	2266PE02	AI Search Method for Problem Solving
2212PE01	Foundations of Data Science	2266PE01	Text Analytics	2212PE03	Web Mining
2205PE02	Computer Graphics & Multimedia	2267PE03	Software Testing Methodologies	2262PE01	Cyber Security
Professional Elective -IV		**Professional Elective -V**		**Professional Elective – VI**	
2205PE19	Cognitive Computing	2205PE05	Pattern Recognition	2266PE03	Game Programming/ **DevOps**
2212PE04	Business Analytics	2205PE05	Introduction to Big Data Analytics	2212PE06	Distributed Trust and Block Chain Technology
2205PE08	Cloud Computing	2205PE10	Distributed Systems	2205PE12	Internet of Things

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN
(2200BS01) MATHEMATICS – I

B.Tech. I YearI Sem

                                 L T PC

                                                 3 1 0 4

Course Objectives: To learn

- Types of Matrices and their properties, concept of a rank of the matrix and applying this concept to know the consistency and solving the system of linear equations.
- Concept of Eigen values and Eigenvectors and to reduce the quadratic form to canonical form.
- Geometrical approach to the mean value theorems, their application to the mathematical problems and Evaluation of improper integrals using Beta and Gamma functions
- Partial differentiation, concept of total derivative, finding maxima and minima of function of two and three variables.
- Evaluation of multiple integrals and their applications.

Course Outcomes:

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

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

UNIT-I:

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

UNIT-II:

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

UNIT-III:

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

UNIT-IV:

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

UNIT-V:

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

TEXTBOOKS:

1. B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010.

2. R. K. Jain and S.R.K. Iyengar, Advanced Engineering Mathematics,Narosa Pubishers, 4th Edition, 2014.

REFERENCES:

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

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

B.Tech. I YearI Sem

L T PC

3 1 0 4

Course Objectives:
- To learn the fundamentals ofcomputers.
- To understand the various steps in programdevelopment.
- To learn the syntax and semantics of C programminglanguage.
- To learn the usage of structured programming approach in solvingproblems.

Course Outcomes: The student will learn
- To write algorithms and to draw flowcharts for solvingproblems.
- To convert the algorithms/flowcharts to C programs.
- To code and test a given logic in C programminglanguage.
- To decompose a problem into functions and to develop modular reusablecode.
- To use arrays, pointers, strings and structures to write Cprograms.
- Searching and sortingproblems.

UNIT I:
Introduction: Introduction to components of a computer system: disks, primary and secondary memory, processor, operating system, compilers, creating, compiling and executing a program etc., Number systems.
Introduction to Algorithms: steps to solve logical and numerical problems. Representation of Algorithm, Flowchart/Pseudo code with examples, Program design and structured programming. Introduction to C Programming Language:
Structure of a C program, Identifiers, variables (with data types and space requirements), Syntax and Logical Errors in compilation, object and executable code, Operators- Arithmetic operators, relational and logical operators, increment and decrement operators, Bitwise operators, conditional operator, assignment operator, expressions and precedence, Expression evaluation, type conversion, typedef, The main method and command line arguments.
I/O: Simple input and output with scanf and printf, formatted I/O, Introduction to stdin, stdout and stderr.

UNIT II:
Conditional Branching and Loops: Writing and evaluation of conditionals and consequent branching with if, if-else, switch-case, ternary operator, goto, Iteration with for, while, do while loops
Arrays: one and two dimensional arrays, creating, accessing and manipulating elements of arrays.
Strings: Introduction to strings, handling strings as array of characters, basic string functions

available in C (strlen, strcat, strcpy, strstr etc.), arrays of strings

UNIT – III
Functions: Designing structured programs, declaring a function, Signature of a function, Parameters and return type of a function, passing parameters to functions, call by value, Passing arrays to functions, passing pointers to functions, idea of call by reference, Some C standard functions and libraries, Passing 1-D arrays, 2-D arrays tofunctions
Recursion: Simple programs, such as Finding Factorial, Fibonacci series, Towers of Hanoi etc., Limitations of Recursive functions.
Storage Classes - extern, auto, register, static, scope rules, block structure.

UNIT IV:
Structures: Defining structures, initializing structures, unions, Array of structures
Pointers: Idea of pointers, Defining pointers, Pointers to Arrays and Structures, pointers to pointers ,Use of Pointers in self-referential structures, usage of self referential structures in linked list (no implementation) Enumeration data type and bit-fields.
Dynamic Memory Management functions, Preprocessing Directives, Preprocessor: Commonly used Preprocessor commands like include, define, undef, if, ifdef, ifndef .

UNIT – V
File Handling: Files: Text and Binary files, Creating and Reading and writing text and binary files, Appending data to existing files, Writing and reading structures using binary files, Random access using fseek, ftell and rewind functions
Introduction to Algorithms: Algorithms for finding roots of quadratic equations, finding minimum and maximum numbers of a given set, finding if a number is prime number, etc. Basic searching in an array of elements (linear and binary search techniques), Basic algorithms to sort array of elements (Bubble, Insertion and Selection sort algorithms), Basic concept of order of complexity through the example programs
Text Books:
1. Computer Science: A Structured Programming Approach Using C, B. A. ForouzanandR. F. Gilberg, Third Edition, CengageLearning.
2. Programming in C. P. Dey and M Ghosh , Second Edition, Oxford UniversityPress.
Reference Books:
1. The C Programming Language, B.W. Kernighan and Dennis M. Ritchie, Second Edition, Pearsoneducation.
2. Programmingwith C, B. Gottfried, 3rd edition, Schaum's outlines, McGraw Hill Education (India) PvtLtd.
3. C From Theory to Practice, G S. Tselikis and N D. Tselikas,CRCPress.
Basic computation and Programming with C, Subrata Saha and S. Mukherjee, CambridgeUniversityPress

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN
(2202ES01) BASIC ELECTRICAL ENGINEERING
B.Tech. I Year I Sem

L T P C
3 0 0 3

Course Objectives:
- To introduce the concepts of electrical circuits and itscomponents
- To understand magnetic circuits, DC circuits and AC single phase & three phasecircuits
- To study and understand the different types of DC/AC machines andTransformers.
- To import the knowledge of various electrical installations.
- To introduce the concept of power, power factor and itsimprovement.

Course Outcomes:
- To analyze and solve electrical circuits using network laws andtheorems.
- To understand and analyze basic Electric and Magneticcircuits
- To study the working principles of ElectricalMachines
- To introduce components of Low Voltage Electrical Installations

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

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

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

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

working of synchronous generators.

UNIT-V: Electrical Installations

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

TEXT-BOOKS/REFERENCE-BOOKS:

1. Basic Electrical Engineering - D.P. Kothari and I.J. Nagrath, 3rd edition 2010,Tata McGraw Hill.
2. D.C. Kulshreshtha, "Basic Electrical Engineering", McGrawHill,2009.
3. L.S. Bobrow, Fundamentals of Electrical Engineering", Oxford UniversityPress,2011
4. Electrical and Electronics Technology, E. Hughes, 10th Edition,Pearson,2010

Electrical Engineering Fundamentals, Vincent Deltoro, Second Edition, PrenticeHall India,1989.

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2200BS07 ENGINEERING CHEMISTRY

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

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

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

UNIT - I:
Molecular structure and Theories of Bonding: Atomic and Molecular orbital's. Linear Combination of Atomic Orbital's (LCAO), molecular orbital's of diatomic molecules, molecular

orbital energy level diagrams of N_2, O_2 and F_2 molecules. π molecular orbital's of butadiene and benzene.

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

UNIT - II:

Water and its treatment: Introduction – hardness of water – Causes of hardness - Types of hardness: temporary and permanent – expression and units of hardness – Estimation of hardness of water by complex metric method. Potable water and its specifications. Boiler troubles: Scales and Sludge's, Priming and Foaming, Caustic Embrittlement. Steps involved in treatment of water – Disinfection of water by chlorination and ozonization. Boiler feed water and its treatment – Calgon conditioning, Phosphate conditioning and Colloidal conditioning. External treatment of water – Ion exchange process. Desalination of water – Reverse osmosis. Numerical problems.

UNIT - III:

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

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

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

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

UNIT - IV:

Stereochemistry, Reaction Mechanism and synthesis of drug molecules: Introduction to representation of 3-dimensional structures, Structural and stereoisomers, configurations, symmetry and chirality. Enantiomers, diastereomers, optical activity and Absolute configuration. Conformation analysis of n- butane.
Substitution reactions: Nucleophilic substitution reactions: Mechanism of SN^1, SN^2 reactions.
Electrophilic and nucleophilic addition reactions: Addition of HBr to propene. Markownikoff and anti Markownikoff's additions. Grignard additions on carbonyl compounds. Elimination reactions: Dehydro halogenation of alkylhalides. Saytzeff rule. Oxidation reactions: Oxidation of alcohols using $KMnO_4$ and chromic acid. Reduction reactions: Reduction of carbonyl compounds using $LiAlH_4$ & $NaBH_4$.Hydroboration of olefins. Structure, synthesis and pharmaceutical applications of Paracetamol and Aspirin.

UNIT – V

Spectroscopic techniques and applications: Principles of electronic spectroscopy: Beer Lamberts law, Numerical problems, types of electronic excitations , applications of UV –Visible

spectroscopy. IR Spectroscopy: Principle, Modes of vibrations, selection rules, Force Constant ,Some common organic functional groups Wave number regions (C-H, NH_2, OH, -COOH, C=O, C≡ N, C=C, C≡ C), applications of IR Spectroscopy, ^{1}H-NMR(NMR Spectroscopy), Principles of NMR spectroscopy, chemical shift, Chemical shifts of some organic protons , Introduction to Magnetic resonance imaging.

Suggested Text Books:
1. Physical Chemistry, by P.W. Atkins
2. Engineering Chemistry by P.C.Jain & M.Jain; Dhanpat Rai Publishing Company (P)Ltd., New Delhi.
3. Fundamentals of Molecular Spectroscopy, by C.N. Banwell
4. Organic Chemistry: Structure and Function by K.P.C. Volhardt and N.E.Schore, 5[th]Edition.
5. University Chemistry, by B.M. Mahan, Pearson IV Edition.
6. Engineering Chemistry (NPTEL Web-book), by B.L. Tembe, Kamaluddin and M.S.Krishnan.
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2200BS62: ENGINEERING CHEMISTRY LAB

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

COURSE OBJECTIVES:
The course consists of experiments related to the principles of chemistry required for engineering student. The student will learn:
- Estimation of hardness and chloride content in water to check its suitability for drinking purpose.
- To determine the rate constant of reactions from concentrations as an function of time.
- The measurement of physical properties like adsorption and viscosity.
- To synthesize the drug molecules and check the purity of organic molecules by thin layer chromatographic (TLC) technique.

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

List of Experiments

1. Determination of total hardness of water by complexometric method using EDTA
2. Determination of chloride content of water by Argentometry
3. Estimation of an HCl by Conductometric titrations

4. Estimation of Acetic acid by Conductometric titrations
5. Estimation of HCl by Potentiometric titrations
6. Estimation of Fe_{2+} by Potentiometry using $KMnO_4$
7. Determination of rate constant of acid catalysed hydrolysis of methyl acetate
8. Synthesis of Aspirin and Paracetamol
9. Thin layer chromatography calculation of R_f values. eg ortho and para nitro phenols
10. Determination of acid value of coconut oil
11. Verification of freundlich adsorption isotherm-adsorption of acetic acid on charcoal
12. Determination of viscosity of castor oil and ground nut oil by using Ostwald's viscometer.
13. Determination of partition coefficient of acetic acid between n-butanol and water.
14. Determination of surface tension of a give liquid using stalagmometer.

References

1. Senior practical physical chemistry, B.D. Khosla, A. Gulati and V. Garg (R. Chand & Co., Delhi)
2. An introduction to practical chemistry, K.K. Sharma and D. S. Sharma (Vikas publishing, N. Delhi)
3. Vogel's text book of practical organic chemistry 5th edition
4. Text book on Experiments and calculations in Engineering chemistry – S.S. Dara.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN
(2202ES61) BASIC ELECTRICAL ENGINEERING LAB

B.Tech. I YearII Sem   **LTPC**
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Course Objectives:
- To analyze a given network by applying various electrical laws and networktheorems
- To know the response of electrical circuits for differentexcitations
- To calculate, measure and know the relation between basic electricalparameters.
- To analyze the performance characteristics of DC and AC electricalmachines

Course Outcomes:
- Get an exposure to basic electricallaws.
- Understand the response of different types of electrical circuits to differentexcitations.
- Understand the measurement, calculation and relation between the basic electrical parameters
- Understand the basic characteristics of transformers and electricalmachines.

List of experiments/demonstrations:
1. Verification of OhmsLaw
2. Verification of KVL andKCL
3. Transient Response of Series RL and RC circuits using DCexcitation
4. Transient Response of RLC Series circuit using DC excitation
5. Resonance in series RLCcircuit
6. Calculations and Verification of Impedance and Current of RL, RC and RLC seriescircuits
7. Measurement of Voltage, Current and Real Power in primary and Secondary Circuits of a Single PhaseTransformer
8. Load Test on Single Phase Transformer (Calculate Efficiency andRegulation)
9. Three Phase Transformer: Verification of Relationship between Voltages and Currents (Star-Delta, Delta-Delta, Delta-star,Star-Star)
10. Measurement of Active and Reactive Power in a balanced Three-phasecircuit
11. Performance Characteristics of a Separately/Self Excited DC Shunt/CompoundMotor
12. Torque-Speed Characteristics of a Separately/Self Excited DC Shunt/CompoundMotor
13. Performance Characteristics of a Three-phase InductionMotor
14. Torque-Speed Characteristics of a Three-phase InductionMotor
15. No-Load Characteristics of a Three-phaseAlternator

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

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

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(2203ES61) ENGINEERING WORKSHOP

Course Objectives:

1. To Study of different hand operated power tools, uses and theirdemonstration.
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 engineeringfield.
4. To develop a right attitude, team working, precision and safety at workplace.
5. To study commonly used carpentryjoints and to have practical exposure to various welding and joiningprocesses.

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

1. Study and practice on machine tools and theiroperations
2. Practice on manufacturing of components using workshop trades including pluming, fitting, carpentry, foundry, house wiring andwelding.
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 wiringpractice.
5. Study commonly used carpentryjoints.

I. Carpentry
1. Cross lapjoint
2. Mortise & tenonjoint

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

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

IV. Housing wiring
1. Two points controlled by two-one way switches(parallel connection)
2. One point controlled by two-two way switches(stair case connection).

V. Foundry
1. Single piece pattern
2. Multi-piece pattern

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

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

TEXT BOOKS:

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

REFERENCE BOOKS:

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

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN
(2200MC01)ENVIRONMENTAL SCIENCE

B.Tech. I YearI Sem   **LTPC**

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Course Objectives:
- Understanding the importance of ecological balance for sustainabledevelopment.
- Understanding the impacts of developmental activities and mitigationmeasures.
- Understanding the environmental policies andregulations

Course Outcomes:
Based on this course, the Engineering graduate will understand /evaluate / develop technologies on the basis of ecological principles and environmental regulations which in turn helps in sustainabledevelopment.

UNIT-I
Ecosystems: Definition, Scope, and Importance of ecosystem. Classification, structure, and function of an ecosystem, Food chains, food webs, and ecological pyramids. Flow of energy, Biogeochemical cycles, Bioaccumulation, Biomagnifications, ecosystem value, services and carrying capacity, Field visits.

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

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

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

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

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

TEXT BOOKS:
1. Textbook of Environmental Studies for Undergraduate Courses by ErachBharucha for UniversityGrantsCommission.
2. Environmental Studies by R. Rajagopalan, OxfordUniversityPress.

REFERENCE BOOKS:
1. Environmental Science: towards a sustainable future by Richard T. Wright. 2008 PHL Learning Private Ltd.NewDelhi.
2. Environmental Engineering and science by Gilbert M. Masters and Wendell P. Ela. 2008 PHI LearningPvt.Ltd.
3. Environmental Science by Daniel B. Botkin & Edward A. Keller, WileyINDIAedition.
4. Environmental Studies by Anubha Kaushik, 4th Edition, New age internationalpublishers.
5. Text book of Environmental Science and Technology - Dr. M. Anji Reddy 2007, BS Publications.

6. Introduction to Environmental Science by Y.Anjaneyulu,BS.Publications.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN
(2200HS01) ENGLISH LANGUAGE & COMMUNICATION SKILLS

B.Tech. I YearII Sem   **LTPC**
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INTRODUCTION

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

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

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

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

UNIT –I
'The Raman Effect' from the prescribed textbook 'English for Engineers' published by Cambridge University Press.
Vocabulary Building: The Concept of Word Formation --The Use of Prefixes and Suffixes.
Grammar: Identifying Common Errors in Writing with Reference to Articles and Prepositions.
Reading: Reading and its Importance- Techniques for Effective Reading.
Basic Writing Skills: Sentence Structures - Use of Phrases and Clauses in Sentences-Importance of Proper Punctuation- Techniques for writing precisely – Paragraph writing – Types, Structures and Features of a Paragraph - Creating Coherence-Organizing Principles of Paragraphs in Documents.

UNIT –II

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

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

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

Reading: Improving Comprehension Skills – Techniques for Good Comprehension

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

UNIT –III

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

Vocabulary: Synonyms and Antonyms

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

Reading: Sub-skills of Reading- Skimming and Scanning

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

UNIT –IV

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

Vocabulary: Idioms and phrases, Phrasal Verbs and One word substitutions

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

Reading: Comprehension- Intensive Reading and Extensive Reading

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

UNIT –V

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

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

Grammar: Reported speech and Common Errors in English

Reading: Reading Comprehension-Exercises for Practice

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

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

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

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN
(2205ES02) PYTHON PROGRAMMING

B.Tech. I YearII Sem   **LTPC**
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Course Objectives:

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

Course Outcomes:

The students should be able to
- Examine Python syntax and semantics and be fluent in the use of Python flow control andfunctions.
- Demonstrate proficiency in handling Strings and FileSystems.
- Create, run and manipulate Python Programs using core data structures like Lists, Dictionaries and use RegularExpressions.
- Interpret the concepts of Object-Oriented Programming as used inPython.
- Implement exemplary applications related to Graphical User Interface (GUI) in Python.

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

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

Inbuilt Functions in Python, Data Type Conversions, Priorities of Data Types in Python, Python Operators, Arithmetic Operators, Comparison (Relational) Operators, Assignment Operators, Logical Operators, Bitwise Operators, Membership Operators, Identity Operators, Slicing & Indexing, Forward Direction Slicing with +ve Step, Backward Direction Slicingwith -ve Step, Decision Making Statements, if Statement, if-else Statement, elif Statement, Looping Statements, Why we use Loops in python?, Advantages of Loops
for Loop, Nested for Loop, Using else Statement with for Loop, while Loop, Infinite while Loop, Using else with Python while Loop, Conditional Statements, break Statement, continue Statement, Pass Statement

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

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

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

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

TEXT BOOK:

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

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

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN
(2200BS05) APPLIED PHYSICS

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

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

UNIT-I: Quantum Mechanics :   **(9 Hours)**
Introduction to quantum physics, Black body radiation, Photoelectric effect,   Compton effect experiment and Compton shift, de-Broglie's hypothesis, Wave-particle duality, Davisson and Germer experiment, Heisenberg's Uncertainty principle, Wave function and its physical significance, Schrodinger's time independent wave equation, Particle in one dimensional box.

UNIT-II: Semiconductor Physics :   **(9 Hours)**
Intrinsic and Extrinsic semiconductors, Fermi level in intrinsic and extrinsic semiconductors, calculation of carrier concentration in intrinsic and extrinsic semiconductors, Carrier generation and recombination, Carrier transport: diffusion and drift, Hall effect: determination of Hall coefficient and experiment, Hall voltage, direct and indirect band gap semiconductors, p-n junction diode: energy band diagram for open and closed circuits , Zener diode and its V-I Characteristics and applications.

UNIT-III: Optoelectronics :   **(6 Hours)**
Radiative and non-radiative recombination mechanisms in semiconductors, LED and Device structure, Materials, Characteristics and figures of merit, Semiconductor photo detectors: Solar cell, PIN and Avalanche and their structure , Materials, working principle and Characteristics and applications.

UNIT-IV: Lasers and Fiber Optics :   **(8 Hours)**
Lasers: Characteristics of Lasers, interaction of radiation with matter: stimulated absorption, spontaneous and stimulated emission, Einstein's relations, Principle and working of Laser: Population inversion, Pumping mechanisms, Types of Lasers: Ruby laser, He-Ne laser, Semiconductor lasers, Applications of laser. Fiber Optics: Introduction Optical fiber, Optical fiber as a dielectric wave guide, Total internal reflection, Acceptance angle, Acceptance cone and Numerical aperture, mode and transmission of signal through Step and Graded index fibers, Losses associated with optical fibers, Applications of optical fibers in communication system (block diagram) and in other fields.

UNIT-V: Dielectric and Magnetic Properties of Materials :   **(8 Hours)**
Electric dipole, dipole moment, dielectric constant, polarizability, electric displacement, electric susceptibility, types of polarization: electronic, ionic and orientation (qualitative) polarizations, calculation of polarizabilities of electronic and ionic polarization, Internal fields in a solid, Clausius-Mossotti equation, Ferroelectrics, Piezo electrics and Pyro electrics, Applications of dielectrics, Magnetization, field intensity, magnetic field induction, permeability and susceptibility, Bohr magneton, Classification of magnetic materials on the basis of magnetic moment, hysteresis curve based on domain theory, soft and hard magnetic materials, applications of magnetic materials.

TEXT BOOKS:
1. Engineering Physics, B.K. Pandey, S. Chaturvedi - Cengage Learing.
2. Halliday and Resnick, Physics - Wiley.
3. A textbook of Engineering Physics, Dr. M. N. Avadhanulu, Dr. P.G. Kshirsagar - S. Chand

REFERENCES:
1. Richard Robinett, Quantum Mechanics
2. J. Singh, Semiconductor Optoelectronics: Physics and Technology, Mc Graw-Hill inc. (1995).
3. Online Course: "Optoelectronic Materials and Devices" by Monica Katiyar and Deepak Guptha on NPTEL
4. "Semiconductor Physics And Devices", Mc Graw Hill, 4th Edition by Donald Neamen

5. Introduction to Solid State Physics by Charles kittel, wiley student edition.
6. S.M. Sze, Semiconductor Devices: Physics and Technology, wiley (2008

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

B.Tech. I Year.   L / T/ P/ C
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(2203ES01) COMPUTER AIDED ENGINEERING GRAPHICS

Course Objectives:

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

Course Outcomes:

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

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

UNIT-I:

Introduction to Engineering Drawing:
Principles of Engineering drawing and their significance, Conventions, Drawing Instruments
Engineering Curves: Construction of Ellipse, Parabola and Hyperbola – General and Special methods; Cycloidal curves- Epicycloids and Hypocycloids.

UNIT-II:

Orthographic Projections, Projections of Points & Straight Lines: Principles of Orthographic Projections – Conventions; Projections of Points in all positions; Projections of lines Parallel to one Plane and Perpendicular to other Plane and Vice-versa - Inclined to one Plane andParallel to other Plane and Vice-versa - Surface Inclined to both the Planes.

UNIT-III:

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

UNIT-IV:

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

UNIT-V:

Isometric Projections: Principles of Isometric projection – Isometric Scale, Isometric Views, Conventions; Isometric Views of lines, Planes, Simple and Compound Solids Conversion of Isometric Views to Orthographic Views and Vice-versa, Conventions
Introduction to Solid Modeling: Creation of simple solid models relevant to the domain.

TEXT BOOKS

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

REFERENCES

1. Engineering Drawing / Basant Agarwal and McAgarwal / McGraw Hill
2. Computer Aided Engineering Drawing – S. Trymbaka Murthy, - I.K. International Publishing House Pvt. Ltd., New Delhi, 3rd revised edition-2006.

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN
(2205ES62) PYTHON PROGRAMMING LAB

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

Course Outcomes:

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

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

Week 2:
1. Write a program that asks the user to enter three numbers (use three separate input statements). Create variables called total and average that hold the sum and average of the three numbers and print out the values of total and average.
2. A lot of cell phones have tip calculators. Write one. Ask the user for the price of the meal and the percent tip they want to leave. Then print both the tip amount and the total bill with the tip included.

3. Write a program which will find all such numbers which are divisible by 7 but are not a multiple of 5,between 2000 and 3200 (both included). The numbers obtained should be printed in a comma-separated sequence on a single line.

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

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

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

   Hint:

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

Week 3:
1. Write a program that asks the user to enter a length in centimeters. If the user enters a negative length, the program should tell the user that the entry is invalid. Otherwise, the program should convert the length to inches and print out the result. There are 2.54 centimeters in an inch.
2. Ask the user for a temperature. Then ask them what units, Celsius or Fahrenheit, the temperature is in. Your program should convert the temperature to the other unit. The conversions are F = 9 5 C + 32 and C = 5 9 (F − 32)
3. Ask the user to enter a temperature in Celsius. The program should print a message based on the temperature: • If the temperature is less than -273.15, print that the temperature is invalid because it is below absolute zero. • If it is exactly -273.15, print that the temperature is absolute 0. • If the temperature is between -273.15 and 0, print that the temperature is below freezing. • If it is 0, print that the temperature is at the freezing point. • If it is between 0 and 100, print that the temperature is in the normal range. • If it is 100, print that the temperature is at the boiling point. • If it is above 100, print that the temperature is above the boiling point
4. Write a program that asks the user how many credits they have taken. If they have taken 23 or less, print that the student is a freshman. If they have taken between 24 and 53, print that they are a sophomore. The range for juniors is 54 to 83, and for seniors it is 84 and over.

Week 4:

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

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

   Question 1: 3 x 4 = 12
   Right!
   Question 2: 8 x 6 = 44
   Wrong.
   The answer is 48.
   ...
   ...
   Question 10: 7 x 7 = 49
   Right.

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

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

Week 5:

1. A number is called a perfect number if it is equal to the sum of all of its divisors, not including the number itself. For instance, 6 is a perfect number because the divisors of 6 are 1, 2, 3, 6 and 6 = 1 + 2 + 3. As another example, 28 is a perfect number because its divisors are 1, 2, 4, 7, 14, 28 and 28 = 1 + 2 + 4 + 7 + 14. However, 15 is not a perfect number because its divisors are 1, 3, 5, 15 and 15 6= 1 + 3 + 5. Write a program that finds all four of the perfect numbers that are less than 10000.

2. . Ask the user to enter 10 test scores. Write a program to do the following:
   (a) Print out the highest and lowest scores.
   (b) Print out the average of the scores.
   (c) Print out the second largest score.
   (d) If any of the scores is greater than 100, then after all the scores have been entered, print a message warning the user that a value over 100 has been entered.
   (e) Drop the two lowest scores and print out the average of the rest of them

3. Write a program that computes the factorial of a number. The factorial, n!, of a number n is the product of all the integers between 1 and n, including n. For instance, 5! = 1 · 2 · 3 · 4 · 5 = 120. [Hint: Try using a multiplicative equivalent of the summing technique.]

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

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

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

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

2. Write a program that asks the user to enter an angle between −180◦ and 180◦ . Using an expression with the modulo operator, convert the angle to its equivalent between 0 ◦ and 360◦ .
3. (a) One way to find out the last digit of a number is to mod the number by 10. Write a program that asks the user to enter a power. Then find the last digit of 2 raised to that power.
   (b) One way to find out the last two digits of a number is to mod the number by 100. Write a program that asks the user to enter a power. Then find the last two digits of 2 raised to that power.
   (c) Write a program that asks the user to enter a power and how many digits they want. Find the last that many digits of 2 raised to the power the user entered

Week 8:
1. The GCD (greatest common divisor) of two numbers is the largest number that both are divisible by. For instance, gcd(18, 42) is 6 because the largest number that both 18 and 42 are divisible by is 6. Write a program that asks the user for two numbers and computes their gcd. Shown below is a way to compute the GCD, called Euclid's Algorithm.
   • First compute the remainder of dividing the larger number by the smaller number
   • Next, replace the larger number with the smaller number and the smaller number with the remainder.

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

2. Write a program that asks the user to enter a string. The program should then print the following:
    - (a) The total number of characters in the string
    - (b) The string repeated 10 times
    - (c) The first character of the string (remember that string indices start at 0)
    - (d) The first three characters of the string
    - (e) The last three characters of the string
    - (f) The string backwards
    - (g) The seventh character of the string if the string is long enough and a message otherwise
    - (h) The string with its first and last characters removed
    - (i) The string in all caps
    - (j) The string with every a replaced with an e
    - (k) The string with every letter replaced by a space

Week 9:

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

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

Week 10:

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

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

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

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

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

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN
(2200BS61)APPLIED PHYSICS LAB

B.Tech. I YearI Sem   **LTPC**
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List of Experiments:
Note: Any 8 Experiments to be performed

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

   To determine the energy band gap of a semiconductor p-n junction diode
2. **Solar Cell**

   Characteristics of a given Solar Cell
3. **Light Emitting Diode**

   To study the VI characteristics of a Light Emitting Diode
4. **Stewart and Gee's Experiment**

   To determine the magnetic induction at the center and at several points on the axis of a circular coil
5. **HALL Effect Experiment**

   Determination of hall coefficient and Hall voltage
   To calculate the Hall coefficient and the carrier concentration of the sample material.
6. **Photoelectric Effect**

   To determine the work function of a given material.
7. **LASER**

   To study the characteristics of LASER diode Sources.
8. **A) Optical Fiber Numerical Aperture**

   To determine the numerical Aperture (NA) of the given optical fiber
   B) Optical Fiber Bending Loss
   To determine the loss caused in optical fibers in dB due to macro bending of the fiber
9. **A) LCR series Circuit**

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

   To study the frequency response of LCR parallel circuits and to determine the Resonant Frequency.
10. **R-C Circuit**

    To determine the time constant of the given RC circuit

MALLA REDDY ENGINEERING COLLEGE FOR WOMEN
(2200MC02) FRENCH LANGUAGE

B.Tech. I Year II Sem   **LTPC**
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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 atA1level.
● The student will have an advantage in the competitive job market.
● This course benefits the graduates when pursuing study *opportunities* in the countries where French is the official language.

UNIT - I:

Speaking: Introduction to the French language and culture – Salutations - French alphabet - Introducing people

Writing: Understand and fill out a form

Grammar: The verbs "to be ' and "to have " in the present tense of the indicative Vocabulary: The numbers from 1 to 20 - Professions - Nationalities

UNIT - II:

Speaking: Talk about one's family – description of a person - express his tastes and preferences -express possession - express negation

Writing: Write and understand a short message

Grammar: Nouns (gender and number) - Articles - The –er verbs in the present – Possessive adjectives - Qualifying adjectives

Vocabulary: The family – Clothes - Colors - The numbers from 1 to 100 - The classroom

UNIT - III
Speaking: Talk about your daily activities - be in time - ask and indicate the date and time –talk about sports and recreation - express the frequency Writing: A letter to a friend
Grammar - The expression of time – Their verbs in the present - The verbs do, go, take, come, -Adverbs - Reflexive verbs
Vocabulary - The days and months of the year-The sports -Hobbies

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

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

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