MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

R22 B TECH CSE - COURSE STRUCTURE

I Year B. Tech – I Semester

S.No	Subject Code	SUBJECT	L	T	P	C	MAX. MARKS INT	MAX. MARKS EXT
1	R22A0001	English	2	0	0	2	40	60
2	R22A0023	Mathematics – I	3	1	0	4	40	60
3	R22A0201	Principles of Electrical and Electronics Engineering	3	0	0	3	40	60
4	R22A0301	Computer Aided Engineering Graphics	2	0	3	4	40	60
5	R22A0501	Programming for Problem Solving	3	0	0	3	40	60
6	R22A0081	English Language and Communication Skills Lab	-	0	2	1	40	60
7	R22A0281	Principles of Electrical and Electronics Engineering Lab	-	0	3	1.5	40	60
8	R22A0581	Programming for Problem Solving Lab	-	0	3	1.5	40	60
9	R22A0004	Environmental Science	2	0	0	0	40	60
		Total	**15**	**1**	**11**	**20**	**360**	**540**

I Year B. Tech – II Semester

S.No	Subject Code	SUBJECT	L	T	P	C	MAX. MARKS INT	MAX. MARKS EXT
1	R22A0002	Professional English	2	0	0	2	40	60
2	R22A0024	Mathematics – II	3	1	0	4	40	60
3	R22A0021	Applied Physics	3	1	0	4	40	60
4	R22A0022	Engineering Chemistry	3	0	0	3	40	60
5	R22A0502	Problem Solving using Python Programming	3	0	0	3	40	60
6	R22A0082	Applied Physics/Engineering Chemistry Lab	-	0	3	1.5	40	60
7	R22A0582	Problem Solving using Python Programming Lab	-	0	3	1.5	40	60
8	R22A0083	Engineering and Computing Hardware Workshop	-	0	2	1	40	60
9	R22A0003	Human Values and Professional Ethics	2	0	0	0	40	60
		Total	**16**	**2**	**8**	**20**	**360**	**540**

II Year B. Tech – I Semester

S.No	Subject Code	SUBJECT	L	T	P	C	MAX. MARKS	
							INT	EXT
1	R22A0503	Data Structures	3	0	0	3	40	60
2	R22A0504	Database Management Systems	3	0	0	3	40	60
3	R22A0505	Software Engineering	3	0	0	3	40	60
4	R22A0506	Design and Analysis of Algorithms	3	1	0	4	40	60
5	R22A0026	Probability, Statistics and Queueing Theory	3	1	0	4	40	60
6	R22A0583	Data Structures Lab	-	0	2	1	40	60
7	R22A0584	Database Management Systems Lab	-	0	2	1	40	60
8	R22A0585	Software Engineering Lab	-	0	2	1	40	60
9	R22A0061	Public Policy and Governance	2	0	0	0	100	-
		Total	**17**	**1**	**6**	**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

S.No	Subject Code	SUBJECT	L	T	P	C	MAX. MARKS	
							INT	EXT
1	R22A0028	Discrete Mathematics	3	1	0	4	40	60
2	R22A0507	Object Oriented Programming through Java	3	0	0	3	40	60
3	R22A0508	Computer Organization	3	0	0	3	40	60
4	R22A0509	Operating Systems	3	0	0	3	40	60
5	R22A0510	Formal Languages and Automata Theory	3	0	0	3	40	60
6	R22A0586	Object Oriented Programming through Java Lab	0	0	2	1	40	60
7	R22A0587	Operating Systems Lab	0	0	2	1	40	60
8	R22A0593	Industry Oriented Project	-	0	4	2	40	60
9	R22A0005	Foreign Language: French	2	0	0	0	100	-
		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

S.No	Subject Code	SUBJECT	L	T	P	C	MAX. MARKS INT	MAX. MARKS EXT
1	R22A0511	Compiler Design	3	1	0	4	40	60
2	R22A0512	Computer Networks	3	0	0	3	40	60
3	R22A0513	Artificial Intelligence	3	0	0	3	40	60
4	R22A05xx	**Open Elective-I**	3	0	0	3	40	60
5	R22A0513 R22A0xxx R22A0515 R22A0xxx	**Professional Elective-I** Scripting Languages Image Processing Intelligent OS Augmented and Virtual Reality	3	0	0	3	40	60
6	R22A0588	Compiler Design Lab	-	0	2	1	40	60
7	R22A0589	Artificial Intelligence Lab	-	0	2	1	40	60
8	R22A0594	Application Development-I	0	0	4	2	40	60
		Total	**15**	**1**	**8**	**20**	**320**	**480**

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

III Year B. Tech – II Semester

S.No	Subject Code	SUBJECT	L	T	P	C	MAX. MARKS INT	MAX. MARKS EXT
1	R22A0xxx	Machine Learning	3	0	0	3	40	60
2	R22A0xxx	Full Stack Development	3	0	0	3	40	60
3	R22A05xx	Cloud Computing	3	1	0	4	40	60
4	R22A0xxx	**Open Elective -II**	3	0	0	3	40	60
5	R22A05xx R22A05xx R22A05xx R22A05xx	**Professional Elective-II** Distributed Systems Digital Forensics Data Visualization Techniques Semantic Web and Social Networks	3	0	0	3	40	60
6	R22A0590	Machine Learning Lab	-	0	2	1	40	60
7	R22A0591	Full Stack Development Lab	-	0	2	1	40	60
8	R22A0595	Application Development-II	0	0	4	2	40	60
		Total	**15**	**1**	**8**	**20**	**320**	**480**

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

IV Year B. Tech – I Semester

S.No	Subject Code	SUBJECT	L	T	P	C	MAX. MARKS	
							INT	EXT
1	R22A05xx	Dev Ops	3	1	0	4	40	60
2	R22A0524	Data Science	3	0	0	3	40	60
3	R22A0525	Big Data Analytics	3	0	0	3	40	60
4	R22A0526 R22A0527 R22A0528 R22A0529	**Professional Elective-III** Quantum Computing Text Analytics Computer Vision and Robotics Block Chain Technology	3	0	0	3	40	60
5	R22A0530 R22A0531 R22A0532 R22A0533	**Professional Elective-IV** Internet of Business Natural Language Processing Soft Computing Adhoc and Sensor Networks	3	0	0	3	40	60
6	R22A0592	DevOps and Analytics Lab	-	0	2	1	40	60
7	R22A0596	Project Phase-I	-	0	6	3	40	60
		Total	**15**	**1**	**8**	**20**	**280**	**420**

IV Year B. Tech – II Semester

S.No	Subject Code	SUBJECT	L	T	P	C	MAX. MARKS	
							INT	EXT
1	R22A03xx	Innovation, Start-Up & Entrepreneurship	4	0	0	4	40	60
2	R22A05xx R22A05xx R22A05xx R22A05xx	**Professional Elective-V** Information Storage and Management Cyber Security Essentials Artificial Neural Networks Design Patterns using JAVA	3	0	0	3	40	60
3	R22A05xx R22A05xx R22A05xx R22A05xx	**Professional Elective-VI** Deep Learning Mobile Game Development Software Requirements and Estimation Edge and Fog Computing	3	0	0	3	40	60
4	R22A0597	Project Phase-II	0	0	20	10	80	120
		Total	**10**	**0**	**20**	**20**	**200**	**300**

OPEN ELECTIVE I		
S.NO	SUBJECT CODE	SUBJECT
1	R22A0551	JAVA PROGRAMMING
2	R22A1251	WEB DEVELOPMENT
3	R22A2151	INTELLECTUAL PROPERTY RIGHTS
4	R22A0351	ROBOTICS & AUTOMATION
5	R22A0451	ELECTRONICS FOR HEALTH CARE
6	R22A0251	RENEWABLE ENERGY SOURCES
7	R22A6751	PRINCIPLES OF DATA SCIENCE
8	R22A6752	BUSINESS ANALYTICS

OPEN ELECTIVE II		
S.NO	SUBJECT CODE	SUBJECT
1	R22A0553	DATABASE SYSTEMS
2	R22A6753	BIG DATA ARCHITECTURE
3	R22A0352	DESIGN THINKING
4	R22A0552	PRINCIPLES OF CLOUD COMPUTING
5	R22A6951	INTERNET OF THINGS & ITS APPLICATIONS
6	R22A2152	NANO TECHNOLOGY
7	R22A0252	ELECTRICAL AND HYBRID VEHICLES
8	R22A6251	CYBER GOVERNANCE

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

I Year B.TECH -I-SEM   **L/T/P/C**

2 /- /-/2

(R22A0001) ENGLISH

INTRODUCTION

English is a global language which is a means to correspond globally. Keeping in account of its vital role in the global market, emphasis is given to train the students to acquire language and communication skills. The syllabus is designed to develop and attain the competency in communicative skills.

The lectures focus on the communication skills and the selected excerpts support as resources for the teachers to develop the relevant skills in the students. The lessons stimulate discussions and help in comprehending the content effectively. The focus is on skill development, nurturing ideas and practicing theskills.

COURSE OBJECTIVES:

1. To enable students to enhance their lexical, grammatical and communicative competence.
2. To equip the students to study the academic subjects with better perspective through theoretical and practical components of the designedsyllabus.
3. To familiarize students with the principles of writing and to ensure error-freewriting
4. To sharpen the speaking skills of learners by involving them in diverse activities such as group discussions, debates, conversations and roleplays.
5. To train students in soft skills with the help of casestudies.

SYLLABUS
Reading Skills:

Objectives

1. To develop an awareness in the students about the significance of silent reading and comprehension.
2. To augment the ability of students to guess the meanings of words from context and grasp the overall message of the text, draw inferencesetc.,
   - Skimming thetext
   - Understanding the gist of anargument
   - Identifying the topicsentence
   - Inferring lexical and contextualmeaning
   - Understanding discoursefeatures
   - Recognizing coherence/sequencing ofsentences
   - Scanning thetext

NOTE:

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

Writing Skills:
Objectives

1. To develop an awareness in the students about basic formal writingskills.
2. To equip students with the components of different forms of writing, beginning with the required ones:
   - Writingsentences
   - Use of appropriatevocabulary
   - Coherence andcohesiveness
   - Formal and informal letterwriting

Unit –I
J K Rowling's Convocation Speech at Harvard

Grammar   –   Tenses and Question Tags
Vocabulary   –   word Formation - AffixesWriting
Writing   –   Paragraph Writing
Reading   –The art of skimming and scanning-
Reading Exercise Type 1
(Match the statements to the text they referto)

Unit – II
"The Road not taken" by Robert Frost

Grammar   –Direct and Indirect Speech

Vocabulary   –   One-Word Substitutes, StandardAbbreviations,
                                                 Synonyms and Antonyms
Writing   –   Essay Writing (Introduction, body andconclusion)
Reading   –   Reading –The art of Intensive and Extensive -Reading
                                                 Exercise Type 2

Unit – III
Satya Nadella's Email to His Employees on his First Day as CEO of Microsoft

Grammar   –   Voices
Vocabulary   –   Transitive and Intransitive
Writing   –   E-mail   Writing,   Letter   Writing
                                                 (complaints, requisitions, apologies).
Reading   –   Reading Comprehension- Reading Exercise Type3
                                                 (Reading between the lines)

Unit – IV
"Abraham Lincoln's Letter to His Son's Teacher"

Grammar   –   Articles, Punctuation
Vocabulary   –   PhrasalVerbs
Writing   –   PrécisWriting
Reading   –   Reading Exercise Type4 (Clozetest)

Unit –V
Abdul Kalam's Biography

Grammar   –   Subject-Verb Agreement, Noun-Pronoun
Agreement Vocabulary–   Commonly ConfusedWords
Writing   –   MemoWriting
Reading   -   Reading Exercise Type5 (Identifyingerrors)

* Exercises apart from the textbook shall also be used for classroom tasks.

REFERENCE BOOKS:
1. Practical English Usage. Michael Swan. OUP.1995.
2. Remedial English Grammar. F.T. Wood.Macmillan.2007
3. https://www.britannica.com/biography/A-P-J-Abdul-Kalam
4. Study Writing. Liz Hamp-Lyons and Ben Heasly. Cambridge University Press.2006.
5. CommunicationSkills.SanjayKumarandPushpaLata.OxfordUniversityPress.2011.

COURSE OUTCOMES:

After completion of the course students will be able to:

1. Gain competence and proficiency in 'productive' skills, i.e., writing and speaking with the recognition of the need for life-long learning of thesame
2. Hone their language abilities in terms of comprehending complex technical texts with a potential to reviewliterature
3. Present ideas clearly and logically to analyze data and provide valid conclusions in writtencommunication
4. Enrich their grammatical accuracy and fluency to be adept at both the active and passiveskills
5. Represent old conventions with a set of the new by professional verbal communicativeability.

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

I Year B. TECH -I-SEM   **L/T/P/ C**
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(R22A0023) MATHEMATICS -I

COURSE OBJECTIVES: To learn

- The concept of a Rank of the matrix and applying the concept to know the consistency and solving the system of linear equations.
- The concept of Eigen values, Eigen vectors and Diagonolisation.
- The maxima and minima of functions of several variables.
- The Applications of first order ordinary differential equations.
- The methods to solve higher order differential equations.

UNIT I: Matrices

Introduction, Types of matrices, Rank of a matrix - Echelon form and Normal form, Consistency of system of linear equations (Homogeneous and Non-Homogeneous)-Gauss elimination method and Gauss-Siedel iteration method.

UNIT II: Eigen values and Eigen vectors

Linear dependence and independence of vectors, Eigen values and Eigen vectors and their properties, Diagonalization of a matrix. Cayley-Hamilton theorem (without proof), finding inverse and power of a matrix by Cayley-Hamilton Theorem; Quadratic forms and Nature of the Quadratic Forms; Reduction of Quadratic form to canonical forms by Orthogonal Transformation.

UNIT III: Multi Variable Calculus (Differentiation)

Functions of two variables, Limit, Continuity, Partial derivatives, Total differential and differentiability, Derivatives of composite and implicit functions, Jacobian-functional dependence and independence, Maxima and minima and saddle points, Method of Lagrange multipliers, Taylors theorem for two variables.

UNIT IV: First Order Ordinary Differential Equations

Exact, Equations reducible to exact form, Applications of first order differential equations - Newton's law of cooling, Law of natural growth and decay, Equations not of first degree-Equations solvable for p, equations solvable for y, equations solvable for x and Clairaut's type

UNIT V : Differential Equations of Higher Order

Linear differential equations of second and higher order with constant coefficients: Non-homogeneous term of the type $f(x) = e^{ax}$, sinax, cosax, x^n, e^{ax} V and x^n V - Method of variation of parameters, Equations reducible linear ODE with constant coefficients-Cauchy's Euler equation and Legendre's equation.

Text Books

i)   Higher Engineering Mathematics by B V Ramana ., Tata McGraw Hill.
ii) Higher Engineering Mathematics by B.S. Grewal, Khanna Publishers.

iii) Advanced Engineering Mathematics by Kreyszig ,John Wiley & Sons .

Reference Books

i)   Advanced Engineering Mathematics by R.K Jain & S R K Iyenger, Narosa Publishers.
ii) Ordinary and Partial Differential Equations by M.D. Raisinghania, S.Chand Publishers
iii) Engineering Mathematics by N.P Bali and Manish Goyal.

Course Outcomes: After learning the concepts of this paper the student will be able to

1. Analyze the solution of the system of linear equations and to find the Eigen values and Eigen vectors of a matrix.
2. Reduce the quadratic form to canonical form using orthogonal transformations.
3. Find the extreme values of functions of two variables with / without constraints.
4. Solve first order, first degree differential equations and their applications.
5. Solve higher order differential equations.
6. Analyze the nature of sequence and series.

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I Year B. TECH -I-SEM   **L/T/P/C**
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(R22A0201)PRINCIPLES OF ELECTRICAL AND ELECTRONICS ENGINEERING

COURSEOBJECTIVES:
1. TounderstandthebasicconceptsofelectricalcircuitsandanalyzeCircuitsusing Network Theorems.
2. Togetoverviewof single phase A.C. circuits and three phase A.C. circuits.
3. To introduce the concept of DCMachines and Single-PhaseTransformers.
4. To study the concepts of p-n diodes, rectifiers and Zener diodes.
5. To study the concepts of BJTs, JFET and MOSFETs.

UNIT –I: **INTRODUCTION TO ELECTRICAL CIRCUITS**: Concept of Circuit and Network, R-L-C Parameters, Ohms law and its limitations, Kirchhoff's Laws-KVL, KCL.

NETWORK ANALYSIS (D.C EXCITATION): Series and parallel connections of Resistive Networks, voltage division and current division, Mesh analysis, Nodal analysis

NETWORK THEOREMS: Thevenin's Theorem, Norton's Theorem and Superposition Theorem (for independent sources).

UNIT–II: SINGLE PHASE A.C. CIRCUITS: Average value, R.M.S. value, form factor and peak factor for sinusoidal wave form. Concept of phase, phasor representation of sinusoidal quantities phase difference, Sinusoidal response of pure R, L, C.
THREE PHASE A.C. CIRCUITS: Advantages of Three phase over single phase, Voltage and Current relationship in star and delta connections.

UNIT-III: MACHINES:
DC Generator: principle of operation and working, Action of commutator, constructional features, basic concept of Lap and wave windings, emf equation.
DC Motor: principle of operation, Back emf and its significance, torque equation-Gross torque and Shaft torque.
Single Phase Transformer: principle of operation, emf equation, problems on emf equation.

UNIT–IV:
P-N JUNCTION DIODE: P-N junction diode, symbol and forward biased and reverse biased conditions, V-I characteristics of P-N junction diode, Half wave, Full wave and Bridge rectifiers. **ZENER DIODE**: Symbol, construction, principle of operation and its applications.

UNIT–V:
BIPOLAR JUNCTION TRANSISTOR: Symbols, types, Construction and Principle of Operation of N-P-N and P-N-P transistors, Amplifying Action, Common Emitter, Common Base and Common Collector configurations.
JFET, Symbol, Construction, Principle of operation, and its Characterstics, MOSFET (Enhancement and Depletion mode) Symbol, Construction, Principle of Operation and its Characteristics.

TEXTBOOKS:

1. Engineering Circuit Analysis-William Hayt, Jack E.Kemmerly, SMDurbin, McGraw Hill Companies.
2. Electric Circuits-A. Chakrabarhty, Dhanipat Rai &Sons.
3. Electrical Machines–P.S.Bimbra, Khanna Publishers.
4. "Electronic Devices & Circuits", SpecialEdition–MRCET, McGraw Hill Publications,2017.
5. Integrated Electronics Analog Digital Circuits, Jacob Millman and D.Halkias, McGrawHill.
6. Electronic Devices and Circuits, S.Salivahanan, N.Sureshkumar, McGrawHill.

REFERENCEBOOKS

1. Network analysis by M.E VanValkenburg, PHI learning publications.
2. Network analysis-N. C Jagan and C. Lakhminarayana, BS publications.
3. Electrical Circuits by A.Sudhakar, Shyam mohan and S Palli, Mc Graw Hill Companies.
4. ElectricalMachinesbyI.J.Nagrath&D.P.Kothari,TataMcGraw-HillPublishers.
5. Electronic Devices and Circuits, K.LalKishore, B.S Publications
6. Electronic Devices and Circuits, G.S.N.Raju, I.K.International Publications, NewDelhi,2006.

COURSEOUTCOMES:

 After the course completion the students will be able to

1. Apply the basic RLC circuit element sand its concepts to networks and circuits.
2. Analyze the circuits by applying network theorems to solve them to find various electrical parameters.
3. Illustrate the single-phase AC circuits along with the concept of impedance parameters and power.
4. Understand the Constructional Details and Principle of Operation of DC Machines and Transformers
5. To understand the concepts of p-n diode, rectifiers and Zener diode
6. To understand the concepts of BJTs, JFET and MOSFETs

MALLA REDDY COLLEGE OF ENGINEERING ANDTECHNOLOGY

I Year B. TECH -I-SEM   **L/T/P/C**
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(R22A0301) COMPUTER AIDED ENGINEERING GRAPHICS

COURSE OBJECTIVES:

1. To learn basic engineering graphics and Auto CAD concepts.
2. To learn the 2D principles of orthographic projections and Multiple views of the same
3. To know the planes and solid Projection
4. To gain the capability of designing 3D objects with isometric principles by using computer aided sketches
5. To know the conversion of Orthographic Views to isometric Views and isometric to Orthographic views

UNIT 1
Introduction to Auto CAD: Introduction to software interface Standard toolbar/menu, Understanding the co-ordinate systems-2D and 3D Visualisation, Setting the Paper sizes and title block importance, printing and plotting. **Draw commands:** line, arc, circle, rectangle, polygons, ellipse, polyline, splines, text. **Modify commands:** copy, mirror, offset, arrays, move, extend, break, trim, lengthen, chamfer, fillet.etc., **Constraints:** horizontal, vertical, parallel, concentric,perpendicular, symmetric, equal, collinear. **Dimensioning Commands:** Dimensioning and Dimension Style. **Division:** Line division, and circle division. **Polygons:** Constructing regular polygons - inscribed and circumscribed methods and general method.

UNIT 2
Projection of Points: Introduction to reference planes, four quadrants, importance of reference lines. Projection of points in all the four quadrants
Projection of Lines: Parallel to both the reference planes, Parallel to one plane and perpendicular to other plane, Inclined to one plane and parallel to other plane, Inclined to both planes

UNIT 3
Projections of Planes: Introduction toRegular planes. Parallel/Perpendicular to one reference plane, Inclined to one plane and Inclined to both the reference planes.
Projections of Solids: Introduction - Prisms, Pyramids, Cone and Cylinder, Axis parallel and perpendicular to one reference plane, Axis inclined to one reference plane.

UNIT 4
Isometric Projection: Introduction, Isometric projection of simple plane figures, Solids - right regular prisms, pyramids, cylinder, cone – H.P, V.P

UNIT 5
Conversions: Conversion of Isometric Views to Orthographic Views and Orthographic Views to Isometric Views

TEXT BOOKS:

1. Engineering Drawing – 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 Prem Kumar Fifth edition, New Age International Publishers

REFERENCE BOOKS:

1. Computer Aided Engineering Drawing – S. Trymbaka Murthy, - I.K. International Publishing House Pvt. Ltd., New Delhi, 3rd revised edition-2006.
2. Engineering Graphics - K.R. Gopalakrishna, 32nd edition, 2005- Subash Publishers, Bangalore.

COURSE OUTCOMES:

After the completion of course the student will be capable to

1. To produce geometric construction, dimensioning & Curves and detail drawings.
2. To compile Projections of points, lines, then create virtual drawing by using computer
3. To sketch the Planes and Solid Projections
4. To develop isometric drawings of simple objects reading the orthographic projections of those objects.
5. To understand and visualize the 3-D view of engineering objects. Elaborate the conversions of 2D -3D and Vice-Versa

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I Year B. TECH -I-SEM   **L/T/P/C**
                                                      3/-/-/3

(R22A0501) PROGRAMMING FOR PROBLEM SOLVING

COURSE OBJECTIVES:

1. To Understand the use of computer system in problem solving and to build program logic with algorithms and flowcharts.
2. TolearnthesyntaxandsemanticsofCprogramminglanguage.
3. Tolearntheusageofstructuredprogrammingapproachinsolvingproblems.
4. To learn the usage of strings and pointers.
5. Understand the usage of structures and files.

UNIT-I: Introduction to Programming:

Computer Languages, Compilers, Compiling and executing a program, Representation of Algorithms and Flowcharts with examples.

Introduction to C Programming Language:

Structure of a C Program**,** I/O: Simple input and output with scanf() and printf(), C Tokens- Keywords, Identifiers, Constants, Variables, Data types, Operators, Expressions andprecedence,Expressionevaluation,Typeconversion.

UNIT-II: Conditional Branching and Arrays:

Control Structures – Selection Statements (Decision Making)- if and switch statements, nested if-else, Iteration and loops: use of while, do-while and for loops, nested loops, use of goto, break and continue statements.

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

UNIT- III: Designing Structured Programs using Functions:

Functions: Declaring a function, Categories of functions, passing parameters to functions: call by value, call by reference, passing arrays to functions, Scope- Local Vs Global, Storageclasses, Recursion with example programs.

UNIT-IV: Strings and Pointers:

Strings: Introduction to strings, Declaration and Initialization, String input/output functions, String manipulation functions with example programs, Array of Strings.

Pointers: Defining pointers, Declaration and Initialization, accessing variables through pointers, Pointers to arrays, Pointers to functions, Pointers to structures, Command line arguments,

Enumeration data type, Dynamic Memory Management Functions: malloc(), calloc(), realloc() and free().

UNIT-V: Structures and File handling in C:
Structures: Defining structures, Declaration and Initialization, Array of structures, unions.
Files: Text and Binary files, Opening and Closing files, File input /output functions, Creating and Reading and writing text files, Appending data to existing files.

TEXTBOOKS:
1. JeriR.HanlyandElliotB.Koffman,ProblemsolvingandProgramDesigninC7thEdition, Pearson.
2. Mastering C, K.R.Venugopal, S R Prasad, Tata McGraw-Hill Education.
3. Computer Programming, E.Balagurusamy, First Edition, TMH.
4. Computer Science: A Structured Programming Approach Using C, B.A.Forouzan and R.F. Gilberg, Third Edition, Cengage Learning.

REFERENCEBOOKS:
1. BrianW.KernighanandDennisM.Ritchie,TheCProgrammingLanguage,PrenticeHall of India.
2. YashavantKanetkar,LetUsC,18thEdition,BPB.
3. Programming in C, Stephen G.Kochan, Fourth Edition, Pearson Education.
4. Herbert Schildt,C: The CompleteReference,McGrawHill,4thEdition.

COURSE OUTCOMES: The student will be able
1. To write algorithms and to draw flowcharts for solving problems.
2. To convert the algorithms/flowcharts to C programs.
3. To code and test a given logic in the C programming language.
4. To decompose a problem into functions and to develop modular reusable code.
5. To use arrays, pointers, strings, structures and files towriteCprograms.

MALLA REDDY COLLEGE OF ENGINEERING ANDTECHNOLOGY

I Year B. TECH -I-SEM   **L/T/P/C**
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(R22A0081) ENGLISH LANGUAGE AND COMMUNICATION SKILLS LAB

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

OBJECTIVES:

1. To facilitate computer-aided multi-media instruction enabling individualized and independent language learning
2. To sensitize the students to the nuances of English speech sounds, word accent, intonation and rhythm
3. To bring about a consistent accent and intelligibility in their pronunciation, ample speaking opportunities are provided.
4. To improve the fluency in spoken English and neutralize mother tongue influence
5. To train students to use language appropriately for interviews, group discussions and public speaking

English Language and Communication Skills Labs two parts:

A. Computer Assisted Language Learning (CALL) Lab

B. Interactive Communication Skills (ICS) Lab

The following course content is prescribed for the English Language and Communication Skills Lab

UNIT –I
CALL Lab: Introduction to Phonetics –Speech Sounds –Vowels and Consonants- Transcriptions
ICS Lab: Ice-Breaking activity - JAM session

UNIT –II
CALL Lab: Pronunciation: Past Tense Markers and Plural Markers
ICS Lab: Situational Dialogues/Role Plays-–Greetings - Taking Leave – Introducing Oneself and Others - Requests and Seeking Permissions

UNIT–III
CALL Lab: Syllable and Syllabification
ICS Lab: Communication at Workplace- Situational Dialogues/Role Plays – Seeking Clarifications – Asking for and Giving Directions – Thanking and Responding – Agreeing and Disagreeing – Seeking and Giving Advice

UNIT –IV
CALL Lab: Word Stress and Intonation
ICS Lab: Information transfer – from visual to verbal - maps, charts, tables and graphs

UNIT –V
CALL Lab: Errors in Pronunciation- Accent - the Influence of Mother Tongue (MTI)
ICS Lab: Making a Short Speech - Extempore

ELCS Lab:

1. Computer Assisted Language Learning (CALL) Lab:

The Computer aided Language Labfor 60 students with 60 systems, one master console, LAN facility and English language software for self-study by learners.

System Requirement (Hardware component):
Computer network with LAN with minimum 60 multimedia systems with the following specifications:
   i) P –IV Processor
      a) Speed –2.8 GHZ
      b) RAM –512 MB Minimum
      c) HardDisk –80 GB

   ii) Headphones of High quality

2. Interactive Communication Skills (ICS) Lab :
A Spacious room with movable chairs and audio-visual aids with a Public Address System, a T. V., a digital stereo –audio & video system and camcorder etc.

DISTRIBUTION AND WEIGHTAGE OF MARKS
English Language Laboratory Practical Examination:
1. The practical examinations for the English Language Laboratory shall be conducted as per the University norms prescribed for the core engineering practical sessions.
2. For the Language lab sessions, there shall be a continuous evaluation during the year for 30 marks and 70 year-end Examination marks. Of the 30 marks, 20 marks shall be awarded for day-to-day work and 10 marks to be awarded by conducting Internal Lab Test(s). The year-end Examination shall be conducted by the teacher concerned with the help of another member of the staff of the same department of the other institution.

OUTCOMES:

1. Learning with precision through computer-assisted individualized and independent language learning to work independently in engineering set up.
2. Improved conversational reception and articulation techniques in the course of repetitive instruction thereby gaining confidence both in institutional and professional environment.
3. Accuracy in pronunciation and restoring Standard English thereby crafting better command in English language so that the students have a cutting edge over others in society.
4. Imbibing appropriate use of language in situations to work as an individual and as o leader in diverse teams
5. Equip themselves with the pre-requisites, and relevant techniques to effectively attend corporate interviews

MALLA REDDY COLLEGE OF ENGINEERING ANDTECHNOLOGY

I Year B. TECH -I-SEM   **L/T/P/C**

-/-/3/1.5

(R22A0281) PRINCIPLES OF ELECTRICAL AND ELECTRONICS ENGINEERING LAB

COURSE OBJECTIVES:

1. To design an electrical system.
2. To analyze a given network by applying various circuit laws and network theorems.
3. To expose the students to the operation of DC machine and transformer.
4. To exhibit the students to the operation of PN junction diode and Zener diode.
5. To expose the students to the operation of Rectifier.

Among the following experiments any 10 are to be conducted

1. Verification of KVL and KCL.
2. Verification of Thevenin's theorem.
3. Verification of Norton's theorem.
4. Verification of Super position theorem.
5. MagnetizationcharacteristicsofDCshuntgenerator.
6. Speed control of DC shunt motor using armature control method.
7. Speed control of DC shunt motor using flux control method
8. Load test on single phase transformer.
9. PN Junction diode characteristics.
10. Zener diode characteristics.
11. Half wave rectifier.
12. Full wave rectifier.

COURSE OUTCOMES:

At the end of the course, students would be able to

1. Explain the concept of circuit laws and network theorems and apply them to laboratory measurements.
2. Be able to systematically obtain the equations that characterize the performance of an electric circuit as well as solving them.
3. Perform the required tests on transformers and DC motors.
4. Plot the characteristics of Zener diodes.
5. Determine the working of rectifiers in detail.

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I Year B. TECH -I-SEM   **L/T/P/C**

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(R22A0581)PROGRAMMING FOR PROBLEM SOLVING LAB

COURSE OBJECTIVES:

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

Practice Sessions:

a. 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.

b. Write a simple program that converts one given data type to another using auto conversion and casting. Take the values from standard input.

Simple numeric problems:

a. Write a program for finding the max and min from the three numbers.

b. Write the program for the simple, compound interest.

c. Write a 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.Readpercentage fromstandard input.

d. Write a program that prints a multiplication table for a given number and the number of rows in the table. For example, for a number 5 and rows=3,the output should be:

5 x1=5

5 x2=10

5 x3=15

Expression Evaluation:

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

b. 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).

c. Write a C program to find the factorial of a given number.

d. Write a C program to find the sum of individual digits of a positive integer and test given

number is palindrome.

e. A Fibonacci sequence is defined as follows: the first and second terms in the sequence are 0and 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.

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

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

Arrays, Functions and Pointers:

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. AdditionofTwoMatrices

      2. MultiplicationofTwoMatrices

c. Write a C program to find the Transposeofamatrix.

d. Write a function to swap the values of two variables using call by value.

e. Write a function to swap the values of two variables using call by reference.

f. 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.

g. Write a program for reading elements using a pointer into an array and display the values using the array.

h. Write a program for display values reverse order from an array using a pointer.

i. Write a program through a pointer variable to sum of n elements from an array.

Strings:

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

      1. To insert a sub-string into a given main string from a given position.

      2. To delete n Characters from a given position in a given string.

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

c. Write a C program that displays the position of a character ch in the string Sor−1ifS doesn't contain ch.

d. Write a C program to count the lines, words and characters in a given text.

Structures:

a. Write a C program to create a structure named book and display the contents of a book.

b. Write a C program to create a structure named student and display the details of 5 students using array of structures.

c. Write a C program to calculate total and percentage marks of a student using structure.

Files:

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

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

c. Write a C program to count the number of times a character occurs in a text file. The file name

and the character are supplied as command line arguments.

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

Miscellaneous:

  a. Write a menu driven C program that allows a user to enter n numbers and then choose between finding the smallest, largest, sum, or average. The menu and all the choices are to be functions. Use a switch statement to determine what action to take. Display an error message if an invalid choice is entered.

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

```
1            *                 1
1 2          * *               2 2
1 23         * **              3 33
                               4 444
```

TEXTBOOKS:

  1. Jeri R. Hanly and Elliot B.Koffman, Problem solving and Program Design in C 7th Edition,Pearson.

  2. B.A. Forouzan and R.F. Gilberg C Programming and Data Structures, Cengage Learning, (3rdEdition).

REFERENCEBOOKS:

  1. BrianW.Kernighan and DennisM.Ritchie,The CProgramming Language,PHI.

  2. E.Balagurusamy,ComputerfundamentalsandC,2ndEdition,McGraw-Hill.

  3. YashavantKanetkar,LetUsC,18thEdition,BPB.

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

  5. Programming in C, Stephen G.Kochan, FourthEdition, Pearson Education.

  6. Herbert Schildt,C: The CompleteReference,McGrawHill,4thEdition.

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

COURSE OUTCOMES:

After completion of the course,Students will be able to**:**

• Formulate the algorithms for simple problems.

• identify andcorrectlogicalerrorsencounteredduringexecution.

• Represent and manipulated at a with arrays, strings, structures and pointers.

• create,read and write to and from simple text and binary files.

• modularizethe code with functions so that they can be reused.

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(R22A0004) ENVIRONMENTAL SCIENCE

COURSE OBJECTIVES: On successful completion of this course, students will be able:

1. CO1: To distinguish the inter relationship between living organism and environment.
2. CO2: To categorize various types of natural resources available on the earth surface.
3. CO3: To detect the causes, and control measures of various types of environmental pollution.
4. CO4: To articulate the issues related to solid waste and its management.
5. CO5: To explain and understand the importance of Sustainable development.

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

1. CO1: Differentiate between various biotic and abiotic components of ecosystem.
2. CO2: Describe the various types of natural resources.
3. CO3: Examine the problems associated with waste management.
4. CO4: Evaluate the causes, and apply control measures of various types of environmental pollutions.
5. CO5: Develop technologies on the basis of ecological principles on environment which in turn helps in sustainable development.

UNIT-I ECOSYSTEMS (6 hours)

Definition, Scope and Importance of Ecosystem; Structure of an Ecosystem - abiotic and biotic component; Functions of an ecosystem- food chains, food webs and ecological pyramids.
Activities: **Activities**: Case studies, poster making, Essays on biotic components.

UNIT-II NATURAL RESOURCES (6hours)

Classification of Resources: Definition of natural resource - renewable and non -renewable resources. Forest resources - functions and uses of forests, Deforestation - causes and consequences. Water resources – Dams - benefits and environmental problems over dams. Renewable resources - solar energy (solar cells), hydro power, biogas and bio-fuel.
Activities: Case studies, seminars, Group Project works, to prepare rain water harvesting models, to demonstrate the generation of electricity with the utilization of non-conventional energy resources.

UNIT-III ENVIRONMENTAL POLLUTION AND TECHNIQUES (6 hours)

Definition, Types of pollution- Air pollution- causes, effects, control measures of air pollution and prevention techniques. Water pollution- causes, effects, control measures and techniques.
Activities: Work sheets, Debate, seminars, surrounding case studies.

UNIT-IV SOLID WASTE MANAGEMENT (5 hours)

Definition of Solid waste, characteristics of solid waste; Solid waste management- collection, transportation, processing treatment and disposal methods; e-waste management; 3R techniques- reduce, reuse and recycle.

Activities: Quiz, Puzzles, Seminars, Case studies.

UNIT-V SUSTAINABLE DEVELOPMENT (4 hours)

Definition of sustainable development, sustainable development goals, threats to sustainability, strategies to achieve sustainable development.

Activities: Worksheets, seminars, slogans, group projects.

TEXT BOOKS

1. Textbook of Environmental Studies for Undergraduate Courses by ErachBharucha for University Grants Commission
2. Environmental Studies by R. Rajagopalan, Oxford University Press.
3. Textbook of Environmental Science and Technology - Dr. M. Anji Reddy 2007, BS Publications
4. Dr. P. D Sharma, "Ecology and Environment", Rastogi Publications, New Delhi, 12 Edition, 2015

REFERENCE BOOKS

1. Environmental Studies by Anubha Kaushik, 4 Edition, New age international publishers
2. Environmental Science: towards a sustainable future by Richard T. Wright. 2008 PHL Learning Pvt. Ltd, New Delhi
3. Environmental Engineering and science by Gilbert M. Masters and Wendell P. Ela. 2008 PHL Learning Pvt. Ltd, New Delhi
4. Environmental Science by Daniel B. Botkin & Edward A. Keller, Wiley INDIA edition

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I Year B. TECH -II-SEM   **L/T/P/C**
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(R22A0002) PROFESSIONAL ENGLISH

INTRODUCTION:

English is a tool for global communication and is the dominant language, which is sweeping almost all the fields in the world. It has become a necessity for people to speak in English comfortably, if they want to enter the global workforce. Hence, the course is designed to help the students to meet the global standards. Each unit focuses on English skill-set to improve: Interview skills, giving presentations and professional etiquette.

COURSE OBJECTIVES:

1. To enrich students to express themselves appropriately and fluently in professional contexts.
2. To enhance their employability through regular participation in group discussions and interviewskills.
3. To lay foundation with writing strategies for the future workplaceneeds.
4. To acquaint students with different components of professional presentationskills.
5. To equip students with necessary training in listening to comprehend dialects of English language.

UNIT-I
"Mokshagundam Visvesvaraya"

Speaking	- Description of Pictures, Places, Objects andPersons
Grammar	- 'If'Clauses
Vocabulary	- Homonyms, homophones andhomographs
Writing	- ParagraphWriting

NOTE: Listening and speaking tasks are solely for lab purpose and not for testing in the examinations.

UNIT –II

Speaking	- SmallTalks
Grammar	- Finite and Non-finite verbs
Vocabulary	- Standard Abbreviations (MiniProject)
Writing	- Job Application – Coverletter

NOTE: Listening and speaking tasks are solely for lab purpose and not for testing in the examinations.

Unit –III

Speaking	- Oralpresentations
Grammar	- Transformation ofSentences
Vocabulary	-Idioms
Writing	- AbstractWriting

NOTE: Listening and speaking tasks are solely for lab purpose and not for testing in the examinations.

Unit – IV

'How a Chinese Billionaire Built Her Fortune'

Speaking	-	TelephonicExpressions and Conversations
Grammar	-	Auxiliary verbs & model Verbs,

Degrees ofComparison

Vocabulary	-	WordAnalogy
Writing	-	Job Application -Resume

NOTE: Listening and speaking tasks are solely for lab purpose and not for testing in the examinations.

Unit – V

Speaking	-	Groupdiscussion
Grammar	-	Common Errors,Prepositions
Vocabulary	-	TechnicalVocabulary
Writing	-	ReportWriting

NOTE: Listening and speaking tasks are solely for lab purpose and not for testing in the examinations.

REFERENCE BOOKS:

1. Practical English Usage. Michael Swan. OUP.1995.
2. Remedial English Grammar. F.T. Wood.Macmillan.2007
3. Skills Annexe& Epitome of Wisdom - B.Tech 1st Year English Study Material, JNTUH.
4. Study Writing. Liz Hamp-Lyons and Ben Heasly. Cambridge University Press.2006.
5. CommunicationSkills.SanjayKumarandPushpaLata.OxfordUniversityPress.2011.
6. ExercisesinSpokenEnglish.Parts.I-III.CIEFL,Hyderabad.OxfordUniversityPress
7. 'English for Engineers'. Cambridge University Press

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I Year B. TECH -II-SEM   **L/T/P/C**
                                                                              3 /1/-/4

(R22A0024) MATHEMATICS-II

OBJECTIVES:

- The aim of numerical methods is to provide systematic methods for solving problems in a numerical form using the given initial data,also used to find the roots of an equation and to solve differential equations.
- The objective of interpolation is to find an unknown function which approximates the given data points and the objective of curve fitting is to find the relation between the variables x and y from given data and such relationships which exactly pass through the data (or) approximately satisfy the data under the condition of sum of least squares of errors.
- PDE aims at forming a function with many variables and also their solution methods, Method of separation of variables technique is learnt to solve typical second order PDE.
- Evaluation of multiple integrals.
- In many engineering fields the physical quantities involved are vector valued functions. Hence the vector calculus aims at basic properties of vector-valued functions and their applications to line, surface and volume integrals.

UNIT – I: Interpolation
Interpolation: Introduction, errors in polynomial interpolation, Finite differences - Forward differences, Backward differences, central differences. Newton's formulae for interpolation, Gauss's central difference formulae, Interpolation with unevenly spaced points - Lagrange's Interpolation.

Curve fitting : Fitting a straight line, second degree curve, exponential curve, power curve by method of least squares.

UNIT – II: Numerical Methods
Solution of algebraic and transcendental equations: Introduction, Bisection Method, Method of false position, Newton Raphson method and their graphical interpretations.

Numerical integration : Generalized quadrature - Trapezoidal rule, Simpson's 1/3rd and Simpson's 3/8th rules.

Numerical solution of ordinary differential equations: Solution by Taylor's series method, Euler's method, Euler's modified method, Runge-Kutta fourth order method.

UNIT III: Partial Differential Equations
Introduction, formation of partial differential equation by elimination of arbitrary constants and arbitrary functions, solutions of first order Lagrange's linear equation and non-linear equations, Charpit's method, Method of separation of variables for second order equations and applications of PDE to one dimensional equation (Heat equation).
Unit IV: Double and Triple Integrals

Double and triple integrals (Cartesian and polar), Change of order of integration in double integrals, Change of variables (Cartesian to polar). Applications: Areas (by double integrals) and volumes (by double integrals and triple).

Unit V: Vector Calculus
Introduction, Scalar point function and vector point function, Directional derivative, Gradient, Divergence, Curl and their related properties, Laplacian operator, Line integral - work done, Surface integrals, Volume integral. Green's Theorem, Stoke's theorem and Gauss's Divergence Theorems (Statement & their Verification).

Text Books:
a. Higher Engineering Mathematics by B V Ramana ., Tata McGraw Hill.
b. Higher Engineering Mathematics by B.S. Grewal, Khanna Publishers.
c. Mathematical Methods by S.R.KIyenger, R.K.Jain, Narosa Publishers.

Reference Books:
i)   Elementary Numerical Analysis by Atkinson-Han, Wiley Student Edition.
ii) Advanced Engineering Mathematics by Michael Greenberg –Pearson publishers.
iii) Introductory Methods of Numerical Analysis by S.S. Sastry, PHI

Course Outcomes: After learning the contents of this paper the student will be able to
1. Find the most appropriate relation of the data variables using curve fitting and this method of data analysis helps engineers to understand the system for better interpretation and decision making.
2. Find the roots of algebraic, non algebraic equations.
3. Solve first order linear and non-linear partial differential equations.
4. Evaluate multiple integrals.
5. Evaluate the line, surface, volume integrals and converting them from one to another using vector integral theorems.

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I Year B. TECH -II-SEM   **L/T/P/C**
                                                              3/1/-/4

(R22A0021) APPLIED PHYSICS

COURSE OBJECTIVES:

1. To understand the basic principles of lasers and optical fibers.

2. To interpret dual nature of the matter and behavior of a particle quantum mechanically.

3. To classify the solids depending upon electrical conductivity.

4. To understand the concepts of semiconductors and devices.

5. To analyze dielectric and magnetic properties of the materials.

UNIT – I

LASERS & FIBER OPTICS   **(15 Hours)**

Lasers: Characteristics of lasers, Absorption, Spontaneous and stimulated emissions, Einstein'sCoefficients,Population inversion, meta stable state, types of pumping, lasing action, construction and working of Ruby Laser, Helium-Neon Laser, Semiconductor diode Laser, Applications of lasers.

Fiber Optics: Introduction to optical fiber, Construction and working principle of an Optical Fiber, Acceptance angle and Numerical aperture, Types of Optical fibers - Mode and index profile,Losses in optical fiber, Optical Fiber in Communication System, Applications of optical fibers.

UNIT – II

QUANTUM MECHANICS   **(10 Hours)**

Wave nature of particles, de Broglie's hypothesis, matter waves, Heisenberg's uncertainty principle, Davisson and Germer's experiment, G.P Thomson experiment, Schrodinger time-independent wave equation-significance of wave function, Particle in one dimensional square well potential.

UNIT – III

FREE ELECTRON THEORY OF METALS   **(12 Hours)**

Free electron theory (Classical & Quantum)- Assumptions, Merits and drawbacks, Fermi level, Density of states, Periodic potential, Bloch's theorem, Kronig – Penny model (qualitative) , E –k diagram, Effective mass, Origin of energy bands in solids, Classification of materials : Metals, semiconductors and insulators.

UNIT-IV

SEMICONDUCTOR PHYSICS   **(15 Hours)**

Intrinsic and Extrinsic semiconductors, Direct and Indirect band gap semiconductors, Carrier concentration in intrinsic and extrinsic semiconductors. Dependence of Fermi level on carrier concentration and temperature, Formation of PN Junction, V-I characteristics of PN Junction diode, Energy Diagram of PN diode, Hall effect, semiconductor materials for optoelectronic devices - LED, Photo diode, Solar cell.

UNIT – V:

DIELECTRICS AND MAGNETIC PROPERTIES OF MATERIALS   **(12 Hours)**

Dielectrics: Introduction, Types of polarizations – Electronic, Ionic and Orientation polarization (qualitative) and calculation of polarizabilities, Internal fields in Solid, Clausius-Mossotti relation, Piezo-electricity and Ferro-electricity.

Magnetism: Introduction, Classification of Dia, Para, Ferro magnetic materials based on magnetic moment, Properties of Anti-Ferro and Ferri magnetic materials, Hysteresis curve based on domain theory, Soft and Hard magnetic materials.

COURSE OUTCOMES:
1. Can apply the principles of laser to understand various lasers and fiber optic systems.
2. Basic principles of quantum mechanics can be used to analyze the microscopic behavior of a particle.
3. Classification of solids can be made by understanding the band structure of solids.
4. Concepts of semiconductors can be applied to predict the importance of electronic devices relevant to engineering domains.
5. Examine dielectric, magnetic properties of the materials and apply them in material technology.

TEXT BOOKS:
a. Engineering Physics by Kshirsagar&Avadhanulu, S. Chand publications.
b.   Modern Engineering Physics-Dr K Vijaya Kumar& Dr S Chandralingam, S. Chand Publications.
c.   Engineering Physics- B.K.Pandey, S.Chaturvedi, Cengage Learning.

REFERENCES:
1. Engineering Physics – R.K. Gaur and S.L. Gupta, DhanpatRai Publishers.
2. Engineering Physics, S Mani Naidu- Pearson Publishers.
3. Engineering physics 2nd edition –H.K. Malik and A.K. Singh.
4. Engineering Physics – P.K. Palaniswamy, Scitech publications.
5. Physics by Resnick and Haliday.

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I Year B. TECH -II-SEM   **L/T/P/C**
3/-/-/3

(R22A0022) ENGINEERING CHEMISTRY

COURSE OBJECTIVES: The students will be able to

1. Acquire the knowledge of electrochemistry and batteries which are essential for the engineers and in industry.
2. Analyze engineering problems related to corrosion and develop different corrosion control techniques.
3. Identify different types of polymers, composites and their applications in various engineering fields.
4. Gain knowledge on wide variety of advanced materials like nano and smart materials which have excellent engineering properties.
5. Analyze water for its various parameters and its significance in industrial and domestic applications.

Unit I   Electrochemistry (8 hours)

Introduction - Types of cells - Electrolytic and Electrochemical cells (construction and working of Galvanic Cell) - Electrode potential- Cell potential (EMF); Nernst equation and its applications; Electrochemical series and its applications. Batteries - Classification of batteries - primary, secondary and fuel cells with examples. Primary cells - Lithium cells; Secondary cells - Lead acid battery and Lithium ion battery; Fuel cells - Differences between battery and a fuel cell; Construction, working and applications of H_2-O_2 fuel cell.

Unit II   Corrosion: (8 hours)

Causes and effects of corrosion – Theories of corrosion - Chemical (oxidation) and Electrochemical corrosion – mechanism of electrochemical corrosion (Evolution of Hydrogen and Absorption of Oxygen); Corrosion control methods - Cathodic protection - Sacrificial anode and Impressed current cathodic methods; Surface coatings – methods of application - Electroplating (Cu-plating) and Electroless plating (Ni-plating) - advantages and applications of electroplating/electroless plating.

Unit III Water and its treatment: (8 hours)

Introduction – hardness of water – causes of hardness; Types of hardness - temporary and permanent – expression and units of hardness-numerical problems; Potable water and its specifications; Disinfectation of water by chlorination and ozonization. Boiler troubles - caustic embrittlement, scales and sludges; External treatment of water – Ion exchange process; Desalination of water – Reverse osmosis.

Unit IV Polymers: (10 hours)

Introduction - Classification of polymers; Types of polymerization - addition and condensation polymerisation with examples. **Plastics** - thermoplastic and thermosetting resins; preparation, properties and engineering applications of Polyvinylchloride (PVC), Teflon (PTFE), and Bakelite. **Rubbers -** Natural rubber and its vulcanization. **Conducting polymers** - classification of conducting polymers – mechanism of conduction in trans-Polyacetylene and applications of conducting polymers. **Bio-degradable polymers** – preparation, properties and applications of Poly-Lactic acid.**Composite materials:** Introduction - Fibre reinforced plastics (FRPs) - Glass fibre reinforced, Carbon fibre reinforced plastics and their applications.

Unit V Advanced Materials: (8 hours)

Nanomaterials: Introduction and classification of nanomaterials; preparation of nanomaterials - Sol-gel method; applications of nanomaterials (industrial and medicinal); Carbon nanotubes (CNTs)-applications.

Smart materials: Introduction - Types of smart materials - examples and applications of piezoelectric materials and shape memory alloys.

Suggested Text Books:

1. Engineering Chemistry by P.C. Jain & M. Jain: Dhanpat Rai Publishing Company (P) Ltd, New Delhi. 16thEdition.
2. Engineering Chemistry by Prasanta Rath, B. Rama Devi, C. H. Venkata Ramana Reddy, Subhendu Chakroborty, Cengage Learning Publication, India Private Limited, 2018.
3. Engineering Analysis of Smart Material Systems by Donald J. Leo, Wiley, 2007.

Reference Books:

1. Engineering Chemistry by Shashi Chawla, Dhanpat Rai Publishing Company (P) Ltd, New Delhi.
2. Engineering Chemistry, by S. S. Dara, S. Chand & Company Ltd, NewDelhi.
3. P.W. Atkins, J.D. Paula, "Physical Chemistry", Oxford, 8thedition (2006).
4. B.R. Puri, L.R. Sharma and M.S. Pathania, "Principles of Physical Chemistry", S. Nagin Chand & Company Ltd., 46thedition (2013).

COURSE OUTCOMES: The student will be able to

1. Relate the knowledge of operating principles of various types of electrochemical cells, including batteries, to optimize the need for sustainable development.
2. Analyze and develop technically sound, economic and sustainable solutions for complex engineering problems related to corrosion and its effects.
3. Identify, formulate and develop polymeric compounds used in various engineering materials for futuristic engineering applications.
4. Apply the knowledge of nanotechnology and smart materials to find solutions for various engineering problems.
5. Familiarize with the fundamentals of water treatment technologies and the considerations for its design and implementation in water treatment plants.

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                                                                                              3/-/-/3

(R22A0502)PROBLEM SOLVING USING PYTHON PROGRAMMING

COURSE OBJECTIVES:

This course will enable students

1. To read and write simple Python programs.
2. To develop Python programs with conditionals and loops.
3. To develop Python programs with using arrays and functions.
4. To use Python data structures–-lists, tuples, dictionaries.
5. To do input/output with files in Python.

UNIT-I

Introduction to Python Programming Language: Introduction to Python Language, Features of Python, Python Installation, Python Input and Output Statements, Numeric Data Types: int, float, boolean, complex and string and its operations, Standard Data Types: List, Tuples, Sets and Dictionaries, Data Type conversions, Comments in Python.

UNIT-II

Variables and Operators: Understanding Python variables, multiple variable declarations, Operators in Python: Arithmetic operators, Assignment operators, Comparison operators, Logical operators, Identity operators, Membership operators, Bitwise operators, Precedence of operators, Expressions.

Control Flow and Loops: Indentation, if statement, if-else statement, chained conditional if- elif -else statement, Loops: While loop, for loop using ranges, Loop manipulation using break, continue and pass.

UNIT- III

Arrays: Advantages of Arrays, Creating an Array, Importing the Array Module, Indexing and Slicing on Arrays, Types of arrays, working with arrays using numpy.

UNIT-IV

Functions: Defining a function, Calling Functions, Passing parameters and arguments, Python Function arguments: Positional Arguments, Keyword Arguments, Default Arguments, Variable-length arguments, Scope of the Variables in a Function–Local and Global Variables, Fruitful Functions, Anonymous functions or Lambda functions, Powerful Lambda functions in Python.

UNIT-V

File Handling in Python: Introduction to files, Text files and Binary files, Access Modes, Writing Data to a File, Reading Data from a File, File input / output functions.

Error Handling in Python: Introduction to Errors and Exceptions: Compile-Time Errors, Logical Errors, Runtime Errors, Types of Exceptions, Python Exception Handling Using try, except and finally statements.

COURSE OUTCOMES:

Upon completion of the course, students will be able to

1. Read, write, execute by hand simple Python programs.
2. Structure simple Python programs for solving problems.
3. Decompose a Python program into arrays and functions.

4. Represent compound data using Python lists, tuples, dictionaries.
5. Read and write data from/to files in Python programs.

TEXT BOOKS
1. R.NageswaraRao,"Core Python Programming",dream tech.
2. Allen B. Downey,``Think Python: How to Think Like a Computer Scientist" 2ndedition,Updated for Python3, Shroff/O'Reilly Publishers,2016.
3. Python Programming: A Modern Approach,VamsiKurama,Pearson.

REFERENCEBOOKS:
1. Core Python Programming,W.Chun,Pearson.
2. Introduction to Python,Kenneth A. Lambert, Cengage.
3. Learning Python,MarkLutz,Orielly.

MALLA REDDY COLLEGE OF ENGINEERING ANDTECHNOLOGY

I Year B. TECH -II-SEM   **L/T/P/C**
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(R22A0082) APPLIED PHYSICS LAB/ENGINEERING CHEMISTRY LAB

COURSE OBJECTIVES:
1. To experience the mechanical oscillations and resonance phenomena.
2. To verify the concepts of light.
3. To analyze voltage/current phase behavior of RC and LCR circuits.
4. To study the characteristics of semiconductor devices.
5. To understand the concepts of laser.

LIST OF EXPERIMENTS:
1. Melde's experiment –Frequency of electrical vibrator.
2. Newton's Rings –Radius of curvature of Plano convex lens.
3. Laser -Wave length of light by using Diffraction grating.
4. CR circuit – Time constant of RC circuit.
5. LCR Circuit- Quality factor and resonance frequency of LCR circuit.
6. LED -Characteristics of LED.
7. Solar cell -Characteristics of Solar cell.
8. Optical fiber- Numerical aperture of an optical fiber.
9. Torsional pendulum- Rigidity modulus of given wire (demonstrative).
10. Hall Effect – Hall coefficient of semiconducting samples (demonstrative).

REFERENCE BOOKS:
1. Practical physics by Dr. Aparna, Dr K.V Rao, V.G.S. Publications.
2. Engineering physics practical lab manual – MRCET

COURSE OUTCOMES:
1. Students can compare the elastic constants of different metallic wires, and also determine the ac frequency of vibrating bar.
2. Students can illustrate the interference of light phenomena.
3. Wavelength of the given laser can be determined by using diffraction phenomenon
4. By understanding electrical principles, Time constant of RC and resonance phenomenon of LCR circuits can be analyzed.
5. V-I characteristics of various semiconductor devices can be illustrated.

(R22A0082) ENGINEERING CHEMISTRY LAB

COURSE OBJECTIVES:

The students will be able:

1. To understand and explain scientifically the various chemistry related problems in the industry/engineering and develop experimental skills for building technical competence.
2. To familiarize with the practical implementation of fundamental concepts.
3. To gain hands on experience in handling the instruments.
4. To demonstrate the digital and instrumental methods of analysis.
5. To correlate the practical aspects with theoretical concepts.

List of Experiments

Titrimetry:

1. Estimation of Hardness of water by EDTA method.
2. Estimation of Ferrous ion by Dichrometry

Instrumental Methods

Conductometry:

3. Estimation of concentration of HCl by Conductometric titrations.
4. Estimation of concentration of Acetic acid by Conductometric titrations.

Potentiometry:

5. Estimation of concentration of HCl by Potentiometric titrations.
6. Estimation of amount of Fe^{2+} by Potentiometric titration using $KMnO_4$.

Colorimetry:

7. Estimation of Copper by Colorimetric method.

Preparation

8. Preparation of a Polymer-**Bakelite**

Physical Property

9. Determination of Surface Tension of a given liquid by Stalagmometer.

Corrosion control method

10. Electroplating of Copper on an Iron object.

Text Book:

1. Inorganic quantitative analysis, Vogel
2. A text book on experiments and calculation in Engineering Chemistry by S.S. Dara

Suggested Readings:

1. Practical Engineering Chemistry by K. Mukkanti, etal, B.S. Publications, Hyderabad.
2. Text Book of engineering chemistry by R. N. Goyal and HarrmendraGoel, Ane Books Private Ltd.

COURSE OUTCOMES:

The students will be able:

1. To estimate the total hardness present in a sample of water.
2. To know the strength of an acid by conductometric and potentiometric methods.
3. To find the amount of Cu^{2+} present in unknown sample using colorimetric method.
4. To prepare a thermosetting polymer.
5. To determine the surface tension of a given liquid.
6. To understand the electroplating method for corrosion protection of metals.

MALLA REDDY COLLEGE OF ENGINEERING ANDTECHNOLOGY

I Year B. TECH -II-SEM   **L/T/P/C**

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(R22A0582)PROBLEM SOLVING USING PYTHON PROGRAMMINGLAB

COURSE OBJECTIVES

This course will enable the students:

1. Able to understand Syntax and Semantics and create Arrays and Functions in Python.
2. Able to learn different data types Lists, Dictionaries in Python.
3. Able to know how to execute the programs using loops and control statements.
4. Able to learn decision making and Functions in Python.
5. Able to know how to handle Files and exceptions in Python.

Week 1:
 A) Write python program to print HelloWorld.
 B) Write a python program to get string, int, float input from user.
 C) Write a python program to add 2 numbers.

Week 2:
 A) Create a list and perform the following methods

   1)insert() 2)remove()   3)append()   4)len()   5)pop()   6) clear()
 B) Write a python program to find the length of list.
 C) Write a python program to find the smallest and largest number in the list.

Week 3:
 A) Create a tuple and perform the following methods

   1) Add items   2) len()   3)check for item in tuple   4)Access items
 B) Write a python program using the following methods:1) count2)index
 C) Write a python program using "+" and "*" operations which resulting a new tuple.

Week 4:
 A) Create a dictionary and apply the following methods

   1) Print the dictionary items   2)access items 3)use get() 4)change values 5)use len()
 B) Write a python code to convert list of tuples into dictionaries.
 C) Write python program to store data in list, tuple, set, dictionary and then try to print them.

Week 5:
 A) Write a python program to perform arithmetic, assignment, logical and comparison
    operators.
 B) Write a Python program to add two positive integers without using the '+' operator. (use bitwise
    operator)
 C) Write a Python program to perform the basic four operators(+,-,*,/).

Week 6:
 A) Write a simple python program to declare a variable in different possible ways.
 B) Write a python program to show precedence of operators using the expression:$z=(v+w)*x/y$
 C) Write a python program to check whether the values of a list exist or not (use membership
    operator) and also perform identity operation.

Week 7:

A) Write a python program to print a number is positive/negative using if-else.

B) Write a python program to find largest number among three numbers.

C) Write a python Program to read a number and display corresponding day using if-elif-else.

D)Write a python program to print list of numbers using range and for loop.

Week 8:

A) Write a python code to print the sum of natural numbers using while loop.

B) Write a python program to print the factorial of given number.

C) Write a python program to find the sum of all numbers stored in a list using for loop.

Week 9:

A) Using a numpy module create an array and check the following:

1. Type of array   2. Axes of array   3. Shape of array   4. Type of elements in array

B) Using a numpy module create array and check the following:

1. List with type float 2. 3*4 array with all zeros 3. From tuple 4. Random values

Week10:

A) Write python program in which a function is defined and calling that function prints Hello World.

B) Write python program in which a function (with single string parameter) is defined and calling that function prints the string parameters given to function.

C) Write a python program using with any one of python function argument.

Week11:

A) Write a program to double a given number and add two numbers using lambda().

B) Write a program for filter() to filter only even numbers from a given list.

C) Write a program for map() function to double all the items in the list?

D) Write a program to find sum of the numbers for the elements of the list by using reduce().

Week12:

A) Write a python program to open and write "hello world" into a file.

B) Write a python program to write the content "hi python programming" for the existing file.

C) Write a python program to read the content of a file.

Week 13:

A) Write a python program to append data to an existing file and then displaying the entire file.

B) Write a python program to open a new file, add some data into it and display the contents of that file.

Week 14:

A) Write a python program to handle the Zero Divison Error exception.

B) Write a python program to demonstrate multiple except block with a single try block.

TEXT BOOKS:

1. R.NageswaraRao,"Core Python Programming",dream tech.
2. Allen B. Downey,"Think Python: How to Think Like a Computer Scientist",SecondEdition,Updated for Python3,Shroff /O' Reilly Publishers,2016.

COURSE OUTCOMES:

After completion of the course, Students will be able to**:**

1. Evaluate Problem solving and programming capability.
2. Describe the Numbers, Math functions, Strings, List, Tuples and Dictionaries in Python.
3. Implement conditional and loop for python programs.
4. Express different Decision Making statements, Arrays and Functions.
5. Understand and summarize different File handling operations and exceptions.

MALLA REDDY COLLEGE OF ENGINEERING ANDTECHNOLOGY

I Year B. TECH -II-SEM   **L/T/P/C**

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(R22A0083) ENGINEERING AND COMPUTING HARDWARE WORKSHOP

It is consisting of 2 parts: Part I: Computing Hardware Workshop
Part II: Engineering Workshop

COURSE OBJECTIVES:

- Understand the internal structure of computer system and learn to diagnose minor problems with the computer functioning.
- Know the proper usage and threats of the World Wide Web & Study in detail about the various features of Ms-Word, Excel, PowerPoint and Google Forms
- To obtain the knowledge about Electrical wiring and Soldering – Desoldering procedures.
- To provide hands on experience in usage of different engineering materials, tools equipments and processes which are common in the engineering field.
- To develop professional attitude, team work, precision and safety practices at work place.

Part I: COMPUTING HARDWARE WORKSHOP

Task- 1: PC HARDWARE

Identification of the peripherals of a computer, components in a CPU and its functions.
Block diagram of the CPU along with the configuration of each peripheral. Functions of
Motherboard. Assembling and Disassembling of PC. Installation of OS. Basic Linux commands.

Task- 2: TROUBLESHOOTING

Hardware Troubleshooting: Students are to be given a PC which does not boot due to proper assembly or defective peripherals and the students should be taught to identify and correct the problem.
Software Troubleshooting: Students have to be given a malfunctioning CPU due to system software problems. They should identify the problem and fix it to get the computer back to working condition.

Task 3: INTERNET

Web Browsers, Access of websites, Surfing the Web, Search Engines, Customization of web browsers, proxy settings, bookmarks, search toolbars, pop-up blockers. Antivirus downloads, Protection from various threats.

MS OFFICE

Task 4: MICROSOFT WORD

Overview of MS word features. Usage of Hyperlink, Symbols, Spell Check, Track Changes. Table of Content, Newspaper columns, Images from files and clipart, Drawing toolbar and Word Art, Formatting Images, Textboxes, Paragraphs and Mail Merge in word. Using Word to create Project Certificate, Project Abstract, News Letter, Resume.

Task 5: MICROSOFT EXCEL

Overview of Excel Features Excel formulae & Functions, conditional formatting, Charts, Hyper linking, Renaming and Inserting worksheets, Data Analysis functions.

Creating a Scheduler (Features: - Gridlines, Format Cells, Summation, auto fill, Formatting)

Calculating GPA (Features: - Cell Referencing, Formulae and functions in excel

Task 6: MICROSOFT POWER POINT

Overview of PowerPoint features, Insertion of images, slide transition, Custom animation, Hyperlinks.

Task 7: GOOGLE FORMS

Google forms   introduction, opening Google forms, editing forms, add questions, copy duplicate questions, delete questions, required questions, more button, form color and themes, preview form, advance form settings, send form, view responses, close form

PART II: ENGINEERING WORKSHOP

A.   List of Experiments:
1. Residential house wiring using switches, fuse, indicator, lamp and energy meter.
2. Fluorescent lampwiring
3. Stair casewiring
4. Soldering and Desoldering practice – components, devices and circuits using general

1. Purpose PCB.

Note: Minimum ONE experiment need to be conducted in each trade

A.   TRADES FOR EXERCISES:

At least two exercises from each trade:

1. Carpentry:

To prepare T-Lap Joint, Dovetail Joint.

To prepare Mortise & Tenon Joint.

2. Fitting:

To prepare V-Fit, Dovetail Fit & Semi-circular fit.

3. Tin-Smithy:

To make Square Tin, Rectangular Tray & Conical Funnel.

Note: Minimum ONE experiment need to be conducted in each trade

Trades to demonstrate:
1. Plumbing
2. Foundry
3. Welding
4. Black smithy
5. Metal cutting (Water Plasma)

Note: Minimum a total of 3 trades to be demonstrated.

TEXT BOOKS – IT WORKSHOP

1. Introduction to Information Technology, ITL Education Solutions limited, Pearson Education
2. Excel Functions and Formulae, Bernd held, Theodor Richardson, Third Edition

TEXT BOOKS – ENGINEERING WORKSHOP

1. Workshop Manual, P. Kannaiah and K. L. Narayana, 3rd Edition, Scitech,2015
2. Printed Circuit Boards - Design, Fabrication, Assembly and Testing, R. S. Khandpur, Tata McGraw-Hill Education, 2005.

COURSE OUTCOMES:

- Ability to identify, assemble and troubleshoot the major components of a computer and perform the installation of Operating System.
- Capacity to make effective usage of the internet for academics and develop professional documents, spreadsheets and presentations.
- Students will be able to understand the domestic, illumination, stair-case wiring procedures and soldering de soldering practice
- The student will have hands-on experience on manufacturing of components using different trades of engineering processes
- The student will be able to perform in a team, adhering to industrial safety practices and follow professional working standards.

MALLA REDDY COLLEGE OF ENGINEERING ANDTECHNOLOGY

I Year B. TECH - II-SEM   **L/T/P/C**
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(R22A0003) HUMAN VALUES AND PROFESSIONAL ETHICS

COURSE OBJECTIVES:

This introductory course input is intended:

1. To help the students appreciate the essential complementarily between 'VALUES' and 'SKILLS' to ensure sustained happiness and prosperity which are the core aspirations of all humanbeings.

2. To facilitate the development of a holistic perspective among students towards life, profession and happiness, based on a correct understanding of the Human reality and the rest of Existence. Such a holistic perspective forms the basis of value based living in a naturalway.

3. To highlight plausible implications of such a holistic understanding in terms of ethical human conduct, trustful and mutually satisfying human behavior and mutually enriching interaction withNature.

UNIT - I:

Course Introduction - Need, Basic Guidelines, Content and Process for Value Education: Understanding the need, basic guidelines, content and process for Value Education.Self-Exploration - what is it? - its content and process; 'Natural Acceptance' and Experiential Validation - as the mechanism for self-exploration. Continuous Happiness and ProsperityA look at basic Human Aspirations- Right understanding, Relationship and Physical Facilities- the basic requirements for fulfillment of aspirations of every human being with their correct priority. Understanding Happiness and Prosperity correctly - A critical appraisal of the current scenario. Method to fulfill the above human aspirations: understanding and living in harmony at various levels.

UNIT - II:

Understanding Harmony in the Human Being - Harmony in Myself! : Understanding human being as a co-existence of the sentient 'I' and the material 'Body'.
Understanding the needs of Self ('I') and 'Body' - Sukh and Suvidha. Understanding the Body as an instrument of 'I' (I being the doer, seer andenjoyer).
Understanding the harmony of I with the Body: Sanyam and Swasthya; correct appraisal of Physical needs, meaning of Prosperity in detail. Programs to ensure Sanyam and Swasthya.

UNIT - III:

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 meaning of Vishwas; Difference between intention and competence. Understanding the meaning of Samman, Difference between respect and differentiation; the other salient values inrelationship.

Understanding the harmony in the society (society being an extension of family):Samadhan, Samridhi, Abhay, Sah-astiva as comprehensive Human Goals. Visualizing a universal harmonious order in society - Undivided Society (Akhand Samaj), Universal Order (SarvabhaumVyawastha) - from family to

worldfamily!

UNIT - IV:
Understanding Harmony in the nature and Existence - Whole existence as Coexistence: Understanding the harmony in the Nature. Interconnectedness and mutual fulfillment among the four orders of nature - recyclability and self-regulation in nature.
Understanding Existence as Co-existence (Sah-astitva) of mutually interacting units in all- pervasive space. Holistic perception of harmony at all levels of existence.

UNIT - V:
Implications of the above Holistic Understanding of Harmony on Professional Ethics: Natural acceptance of human values, Definitiveness of Ethical Human Conduct, Basic for Humanistic Education, Humanistic Constitution and Humanistic Universal Order. Competence in professional ethics:

a. Ability to utilize the professional competence for augmenting universal human order.
b. Ability to identify the scope and characteristics of people-friendly and eco-friendly productionsystems.
c. Ability to identify and develop appropriate technologies and management patterns for above productionsystems.

TEXT BOOKS:
1. R. R. Gaur, R Sangal, G P Bagaria, 2009, A Foundation Course in Human Values and ProfessionalEthics.
2. Prof. K. V. Subba Raju, 2013, Success Secrets for Engineering Students, Smart Student Publications, 3rdEdition.

REFERENCE BOOKS:
1. Ivan IIlich, 1974, Energy & Equity, The Trinity Press, Worcester, and HarperCollins, USA
2. E. F. Schumancher, 1973, Small is Beautiful: a study of economics as if people mattered. Blond & Briggs,Britain.
3. A Nagraj, 1998 Jeevan Vidya ek Parichay, Divya Path Sansthan,Amarkantak.
4. Sussan George, 1976, How the Other Half Dies, Penguin Press, Reprinted 1986,1991.
5. P. L. Dhar, R. R. Gaur, 1990, Science and Humanism, CommonwealthPublishers.
    A. N. Tripathy, 2003, Human Values, New Age InternationalPublishers.
6. Subhas Palekar, 2000, How to practice Natural Farming, Pracheen(Vaidik) Krishi Tantra Shodh,Amravati.
7. Donella H. Meadows, Dennis L. Meadows, Jorgen Randers, William W. Behrens III, 1972, Limits to Growth - Club of Rome's report, UniverseBooks.
8. E G Seebauer& Robert L.Berry, 2000, Fundamentals of Ethics for Scientists & Engineers, Oxford UniversityPress.
9. M Govindrajan, S Natrajan& V. S Senthil kumar, Engineering Ethics (includingHumna Values), Eastern Economy Edition, Prentice Hall of IndiaLtd.

Relevant CDs, Movies, Documentaries & Other Literature:

1. Value Education website, http://www.uptu.ac.in

2. Story of Stuff,http://www.storyofstuff.com

3. AI Gore, An Inconvenient Truth, Paramount Classics,USA

4. Charle Chaplin, Modern Times, United Artists,USA

5. IIT Delhi, Modern Technology - the UntoldStory

COURSE OUTCOMES:

1. The students will be able to obtain happiness and prosperity in theirlife.

2. They will develop harmony at alllevels.

3. They can have satisfying human behavior throughout theirlife

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

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

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(R22A0503) DATA STRUCTURES

COURSE OBJECTIVES:

This course will enable students to

1. Learn Object Oriented Programming concepts in Python.
2. Illustrate how searching and sorting is performed in Python.
3. Understanding how linear data structures works.
4. Implement Dictionaries and graphs in Python.
5. Understanding how Non linear data structures works.

UNIT – I
Oops Concepts - class, object, constructors, types of variables, types of methods. **Inheritance:** single, multiple, multi-level, hierarchical, hybrid, **Polymorphism:** with functions and objects, with class methods, with inheritance, **Abstraction:** abstract classes.

UNIT – II
Searching - Linear Search and Binary Search.
Sorting - Bubble Sort, Selection Sort, Insertion Sort, Merge Sort, Quick Sort.

UNIT – III
Data Structures – Definition, Linear Data Structures, Non-Linear Data Structures,
Stacks - Overview of Stack, Implementation of Stack (List), Applications of Stack
Queues: Overview of Queue, Implementation of Queue (List), Applications of Queues, Priority Queues
Linked Lists – Implementation of Singly Linked Lists, Doubly Linked Lists, Circular Linked Lists. Implementation of Stack and Queue using Linked list.

UNIT – IV
Dictionaries: linear list representation, skip list representation, operations - insertion, deletion and searching.
Graphs - Introduction, Directed vs Undirected Graphs, Weighted vs Unweighted Graphs, Representations, Breadth First Search, Depth First Search.

UNIT -V
Trees - Overview of Trees, Tree Terminology, Binary Trees: Introduction, Implementation, Applications. Tree Traversals, Binary Search Trees: Introduction, Implementation, AVL Trees: Introduction, Rotations, Implementation B-Trees and B+ Trees.

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

COURSE OUTCOMES:

The students should be able to:

1. Interpret the concepts of Object-Oriented Programming as used in Python.
2. Know the usage of various searching and sorting techniques
3. Implement Linear data structures like stack ,Queue and Linked Lists
4. Illustrate the concepts of Dictionaries and graphs
5. Implement various types of trees.

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

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

3/-/-/3

(R22A0504) DATABASE MANAGEMENT SYSTEMS

COURSE OBJECTIVES:
- To study the physical and logical database designs, database modeling, relational, hierarchical, and network models
- To understand and use data manipulation language to query, update, and manage a database
- To develop an understanding of essential DBMS concepts such as: database security, integrity, concurrency, distributed database, and intelligent database, Client/Server(Database Server),Data Warehousing.
- To design and build a simple database system and demonstrate competence with the fundamental tasks involved with modeling, designing, and implementing a DBMS.
- Familiar with basic database storage structures and access techniques: file and page organizations

UNIT I:
Database System Applications, Purpose of Database Systems, View of Data–Data Abstraction – Instances and Schemas–Database Languages– database Access for applications Programs– Database Users and Administrator–Transaction Management–Database Architecture–Storage Manager–the Query Processor.
Data Models: Introduction to the Relational Model– Structure – Database Schema, Keys – Schema Diagrams. Database design– Other Models, ER diagrams – ER Model -Entities, Attributes and Entity sets – Relationships and Relationship sets – ER Design Issues – Concept Design – Conceptual Design with relevant Examples. Relational Query Languages, Relational Operations.

UNIT II:
Relational Algebra–Selection and projection set operations–renaming–Joins–Division Examples of Algebra overviews – Relational calculus – Tuple Relational Calculus (TRC) –Domain relational calculus(DRC).
Overview of the SQL Query Language – Basic Structure of SQL Queries, Set Operations, Aggregate Functions–GROUPBY–HAVING, Nested Subqueries, Views, Triggers, Procedures.

UNIT III:
Normalization – Introduction, Non loss decomposition and functional dependencies, First, Second, and third normal forms – dependency preservation, Boyce/Codd normal form.Higher Normal Forms - Introduction, Multi-valued dependencies and Fourth normal form, Join dependencies and Fifth normal form

UNIT IV:
Transaction Concept- Transaction State- Implementation of Atomicity and Durability – Concurrent Executions – Serializability- Recoverability – Implementation of Isolation –

Testingforserializability-Lock–BasedProtocols–TimestampBasedProtocols-Validation-BasedProtocols–MultipleGranularity.

UNIT V:

Recovery and Atomicity– Log– Based Recovery – Recovery with ConcurrentTransactions– CheckPoints-BufferManagement–Failurewithlossofnonvolatilestorage.

TEXTBOOKS:

1. DatabaseSystemConcepts,Silberschatz,Korth,McGrawhill,SixthEdition.(All units except IIIrd)
2. Database Management Systems, Raghu Ramakrishnan, Johannes Gehrke, TATA McGraw Hill 3rd Edition.

REFERENCEBOOKS:

1. Fundamentals of Database Systems, Elmasri Navathe Pearson Education.
2. An Introduction to Database systems, C.J. Date, A.Kannan, S.Swami Nadhan, Pearson, Eight Edition for UNITIII.

COURSE OUTCOMES:

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

1. Demonstrate the basic elements of a relational database management system
2. Ability to identify the data models for relevant problems
3. Ability to design entity relationship and convert entity relationship diagrams into RDBMS and formulate SQL queries.
4. Apply normalization for the given database
5. Understand the various Recovery Mechanisms

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II Year B.Tech.CSE- I Sem   **L/T/P/C**
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(R22A0505) SOFTWARE ENGINEERING

COURSE OBJECTIVES

- The aim of the course is to provide an understanding of the working knowledge of the techniques to understand Software development as a process.
- Various software process models and system models.
- Various software designs, Architectural, object oriented, user interface etc.
- Software testing methodologies overview: various testing techniques including white box testing black box testing regression testing etc.
- Software quality: metrics, risk management quality assurance etc.

UNIT-I

Introduction to Software Engineering: The evolving role of software, changing nature of software, software myths.

A Generic view of process: Software engineering-a layered technology, a process framework, the capability maturity model integration(CMMI).

Process models: The waterfall model, Spiral model and Agile methodology

UNIT -II

Software Requirements: Functional and non- functional requirements, user requirements, system requirements, interface specification, the software requirements document.

Requirements engineering process: Feasibility studies, requirements elicitation and analysis, requirements validation, requirements management.

UNIT-III

Design Engineering: Design process and design quality, design concepts, the design model. Creating an architectural design: software architecture, data design, architectural styles and patterns, architectural design, conceptual model of UML, basic structural modeling, class diagrams, sequence diagrams, collaboration diagrams, usecase diagrams, component diagrams.

UNIT-IV

Testing Strategies: A strategic approach to software testing, test strategies for conventional software, black-box and white-box testing, validation testing, system testing, the art of debugging. Metrics for Process and Products: Software measurement, metrics for software quality.

UNIT-V

Risk management: Reactive Vs proactive risk strategies, software risks, risk identification, risk projection, risk refinement, RMMM.

Quality Management: Quality concepts, software quality assurance, software reviews, formal technical reviews, statistical software quality assurance, software reliability, the ISO 9000 quality standards.

TEXTBOOKS:
1. SoftwareEngineering,Apractitioner'sApproach-
   RogerS.Pressman,6thedition,McGrawHillInternationalEdition.
2. SoftwareEngineering-Sommerville,7thedition,PearsonEducation.

Course Outcomes

- Understand software development life cycle Ability to translate end-user requirements into system and software requirements.
- Structure the requirements in a Software Requirements Document and Analyze Apply various process models for a project, Prepare SRS document for a project
- Identify and apply appropriate software architectures and patterns to carry out high level design of a system and be able to critically compare alternative choices.
- Understand requirement and Design engineering process for a project and Identify different principles to create an user interface
- Identify different testing methods and metrics in a software engineering project and Will have experience and/or awareness of testing problems and will be able to develop a simple testing report

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II Year B.Tech.CSE- I Sem   **L/T/P/C**
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(R22A0506)

DESIGN AND ANALYSIS OF ALGORITHMS

COURSE OBJECTIVES:

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

UNITI

Introduction: Algorithms, Pseudocode for expressing algorithms, performance analysis-Space complexity, Time Complexity, Asymptotic notation- Big oh notation, omega notation, theta notation and little oh notation.

Divide and Conquer: General method. Applications- Binary search, Quick sort, merge sort, Strassen's matrix multiplication.

UNITII

Disjoint set operations, Union and Find algorithms, AND/OR graphs, Connected components, Bi-connected components.

Greedy method: General method, applications-Job sequencing with deadlines, Knapsack problem, Spanning trees, Minimum cost spanning trees, Single source shortest path problem.

UNITIII

Dynamic Programming: General method, applications-Matrix chained multiplication, Optimal binary search trees,0/1 Knapsack problem, All pairs shortest path problem, Traveling sales person problem.

UNIT IV

Backtracking: General method Applications-n-queens problem, Sum of subsets problem, Graph coloring, Hamiltonian cycles.

UNIT V

Branch and Bound: General method, applications- Travelling sales person problem,0/I k Knapsack problem LC branch and Bound solution, FIFO branch and bound solution.

NP-Hard and NP-Complete Problems: Basic concepts, Non deterministic algorithms, NP-Hard and NP-Complete classes, NP-Hard problems,Cook'stheorem.

TEXTBOOKS:
1. Fundamentals of Computer Algorithms, Ellis Horowitz, Satraj Sahni and Rajasekharan, Universities press
2. Design and Analysis of Algorithms, P.h.Dave,2ndedition,PearsonEducation.

REFERENCES:

1. Introduction to the Design And Analysis of Algorithms ALevitin Pearson Education
2. Algorithm Design foundations Analysis and Internet examples, M.T.Goodrich and R Tomassia John Wiley and sons
3. Design and Analysis of Algorithms, S.Sridhar, Oxford Univ.Press
4. Design and Analysis of Algorithms, Aho,Ulman and Hopcraft, Pearson Education.
5. Foundations of Algorithms,R.NeapolitanandK.Naimipour,4thedition

COURSE OUTCOMES:

1. Ability to analyze the performance of algorithms.
2. Ability to choose appropriate algorithm design techniques for solving problems.
3. Ability to understand how the choice of data structures and the algorithm design methods to impact the performance of programs.
4. Describe the dynamic programming paradigm and explain when an algorithmic design situation calls for it. Synthesize dynamic programming algorithms and analyze them.
5. Describes NP hard and NP complete classes and also about the importance of Cook's theorem.

II Year B.Tech. CSE- I Sem   L/T/P/C
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(R22A0026)   PROBABILITY, STATISTICS AND QUEUEING THEORY

Course Objectives:

- To understand a random variable that describes randomness or an uncertainty in certain realistic situation. It can be either discrete or continuous type.
- To learn important probability distributions like: in the discrete case, study of the Binomial and the Poisson Distributions and in the continuous case the Normal Distributions.
- To Understand linear relationship between two variables and also to predict how a dependent variable changes based on adjustments to an independent variable.
- To learn the types of sampling, sampling distribution of means and variance, Estimations of statistical parameters.
- Use of probability theory to make inferences about a population from large and small samples.
- To understand different queuing models.

UNIT – I: Basic Probability and Random Variables

Basic Probability: Definition,The axioms of probability and basic problems.

Single Random Variables:Discrete and Continuous. Probability distribution function,Probability mass and density functions, mathematical expectation.
Multiple Random variables: Discrete and Continuous, Joint probability distributions-Joint probability mass and density functions, Marginal probability mass and density functions.

UNIT-II: Probability Distributions

Binomial distribution – properties, mean, variance and recurrence formula for Binomial distribution, Poisson distribution – Poisson distribution as Limiting case of Binomial distribution, properties, mean variance and recurrence formula for Poisson distribution,Normal distribution – mean, variance, median,mode and characteristics of Normal distribution.

UNIT -III:Correlation and Regression

Correlation -Coefficient of correlation, Rank correlation, Regression- Regression coefficients, Lines of regression.

Multiple correlation and regression- Coefficient of multiple Correlation, multiple regression, Multiple linear regression equations.

UNIT –IV: Testing of Hypothesis

Sampling: Definitions ,Standard error . Estimation - Point estimation and Interval estimation.

Testing of hypothesis: Null and Alternative hypothesis - Type I and Type II errors, Critical region - confidence interval - Level of significance, One tailed and Two tailed test.

Large sample Tests: Test of significance - Large sample test for single mean, difference of means, single proportion, difference of proportions.

Small samples: Test for single mean, difference of means, paired t-test, test for ratio of variances (F-test) ,Chi- square test for goodness of fit and independence of attributes.

UNIT V: Queuing Theory

Queuing theory –Structure of a queuing system and its characteristics-Arrival pattern and service pattern- Pure birth and Death process.

Terminology of Queuing systems-queuing models and its types - M/M/1 Model of infinite queue(without proofs) and M/M/1 Model of finite queue(without proofs).

Suggested Text Books:

Fundamental of Statistics by S.C. Gupta,7thEdition,2016.

Fundamentals of Mathematical Statistics by SC Gupta and V.K.Kapoor

Higher Engineering Mathematics by B.S. Grewal, Khanna Publishers, 35th Edition,2000.

R. A. Johnson, Miller and Freund's "Probability and Statistics for Engineers", Pearson Publishers, 9th Edition, 2017.

References :

Introduction to Probability and Statistics for Engineers and Scientists by SheldonM.Ross.

Probability and Statistics for Engineers by Dr. J. Ravichandran.

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

1. Describe randomness in certain realistic situation which can be either discrete or continuous type and compute statistical constants of these random variables.
2. Provide very good insight which is essential for industrial applications by learning probability distributions.
3. Make objective, data-driven decisions by using correlation and regression.
4. *Draw statistical inference* using samples of a given size which is taken from a population.
5. To design balanced systems that serve customers quickly and efficiently but it is not cost effective.

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II Year B.Tech. CSE- I Sem   **L/T/P/C**
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(R22A0583) DATA STRUCTURES LAB

COURSE OBJECTIVES:
1. To understand a range of Object-Oriented Programming, as well as in-depth data and information processing techniques.
2. To know how linear data structures work
3. To illustrate non-linear data structures.
4. To simulate searching and sorting techniques.
5. To develop programs for performing operations on Trees and Graphs .

WEEK 1: Write a Python program for class, Flower, that has three instance variables of type str, int, and float, that respectively represent the name of the flower, its number of petals, and its price. Your class must include a constructor method that initializes each variable to an appropriate value, and your class should include methods for setting the value of each type, and retrieving the value of each type.

WEEK 2: Develop an inheritance hierarchy based upon a Polygon class that has abstract methods area( ) and perimeter( ). Implement classes Triangle, Quadrilateral, Pentagon, that extend this base class, with the obvious meanings for the area( ) and perimeter( ) methods. Write a simple program that allows users to create polygons of the various types and input their geometric dimensions, and the program then outputs their area and perimeter.

WEEK 3: Write a python program to implement method overloading and method overriding.

WEEK 4: Write a program for Linear Search and Binary search

WEEK 5: Write a program to implement Bubble Sort and Selection Sort

WEEK 6: Write a program to implement Merge sort and Quick sort

WEEK 7: Write a program to implement Stacks and Queues.

WEEK 8: Write a program to implement Singly Linked List

WEEK 9: Write a program to implement Doubly Linked List

WEEK 10: Write a python program to implement DFS & BFS graph traversal Techniques.

WEEK 11: Write a program to implement Binary Search Tree

WEEK 12: Write a program to implement B+ Tree

COURSE OUTCOMES:

The students should be able to:
1. Interpret the concepts of Object-Oriented Programming as used in Python.
2. Illustrate how searching and sorting can be done.
3. Implement stacks , queues and linked list.
4. Implement Non-Linear data structures like graphs
5. Solve problems using various trees .

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II Year B.Tech.CSE- I Sem   **L/T/P/C**
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(R22A0584) DATABASE MANAGEMENT SYSTEMS LAB

COURSE OBJECTIVES:
1. Introduce ER data model, database design and normalization
2. Learn SQL basics for data definition and data manipulation
3. To enable students to use Non-Relational DBMS and understand the usage of document oriented and distributed databases.
4. To enable the students to use TCL and DCL Commands and perform all states of Transaction operations.
5. To familiarize issues of concurrency control and transaction management

List of Experiments:
1. Concept design with E-R Model
2. Relational Model
3. Normalization
4. Practicing DDL commands
5. Practicing DML commands
6. A. Querying (using ANY, ALL, UNION, INTERSECT, JOIN, Constraints etc.)
   B. Nested, Correlated subqueries
7. Queries using Aggregate functions, GROUP BY, HAVING and Creation and dropping of Views.
8. Triggers (Creation of insert trigger, delete trigger, update trigger)
9. Procedures
10. Usage of Cursors
11. Installation of MySQL / MongoDB and practicing DDL, commands

TEXT BOOKS:
1. Database Management Systems, Raghurama Krishnan, Johannes Gehrke, Tata Mc Graw Hill, 3 rd Edition
2. Database System Concepts, Silberschatz, Korth, McGraw Hill, V edition.

REFERENCE BOOKS:
1. Database Systems design, Implementation, and Management, Peter Rob & Carlos Coronel 7th Edition.
2. Fundamentals of Database Systems, Elmasri Navrate, Pearson Education
3. Introduction to Database Systems, C.J. Date, Pearson Education
4. Oracle for Professionals, The X Team, S. Shah and V. Shah, SPD.
5. Database Systems Using Oracle: A Simplified guide to SQL and PL/SQL, Shah, PHI.
6. Fundamentals of Database Management Systems, M. L. Gillenson, Wiley Student Edition.

COURSE OUTCOMES:
1. Design database schema for a given application and apply normalization

2. Acquire skills in using SQL commands for data definition and data manipulation.
3. Develop solutions for database applications using procedures, cursors and triggers

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(R22A0585) SOFTWARE ENGINEERING LAB

Prerequisites

- A course on "Programming for Problem Solving".

Co-requisite

- A Course on "Software Engineering".

Course Objectives:

- Discuss and Analyses how to develop software requirements specifications for a given problem.
- To understand Software development as a process
- To implement Various software designs, data flow diagram models.
- various testing techniques including white box testing black box testing regression testing
- To have hands on experience in developing a software project by using various software engineering principles and methods in each of the phases of software development.

List of Experiments

Do the followings even exercises for any two projects given in the list of sample projects or any other Projects:

1. Development of problem statements.
2. Preparation of Software Requirement Specification Document, Design Documents and Testing Phase related documents.
3. Preparation of Software Configuration Management and Risk Management related documents.
4. Study and usage of any Design phase CASE tool
5. Performing the Design by using any Design phase CASE tools.
6. Develop testcases for unit testing and integration testing
7. Develop test cases for various white box and black box testing techniques.

Sample Projects:

1. Passport automation System
2. Book Bank
3. Online Exam Registration
4. Stock Maintenance System
5. Online course reservation system
6. E-ticketing
7. Software Personnel Management System

8. Credit Card Processing

9. E-book management System.

10. Recruitment system

TEXT BOOKS:

1. Software Engineering, A practitioner's Approach- Roger S. Pressman, 6th edition, McGraw Hill International Edition.
2. SoftwareEngineering-Sommerville,7thedition,PearsonEducation.
3. The unified modeling language user guide Grady Booch, James Rambaugh, Ivar Jacobson, Pearson Education.

REFERENCE BOOKS:

1. Software Engineering, an Engineering approach- James F. Peters, Witold Pedrycz, John Wiley.
2. Software Engineering principles and practice-Waman SJawadekar

Course Outcomes:

- Ability to translate end-user requirements into system and software requirements
- Ability to generate a high-level design of the system from the software requirements
- Will have experience and/or awareness of testing problems and will be able to develop a simple testing report
- Understand and develop various structure and behavior UML diagrams.
- Explain the knowledge of project management tool Demonstrate how to manage file using Project Libre project management tool.

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(R22A0061) PUBLIC POLICY & GOVERNANCE

Course objectives:

1. To make the students understand in-depth analysis of public policy and to solve its ills prevailing in the society.
2. To provide an opportunity for the students to learn the basic areas of public policy analysis, implementation and evaluation.
3. To make understand the process and various approaches in public policy making.
4. To understand the theories and issues of social coordination and the nature of all patterns of rule.
5. To make the students understand the techniques of governance and emerging trends in public and private governance its policy-making and implementation.

Unit-I
Introduction of Public Policy: Definition, Nature, Scope and Importance of Public Policy, Evolution of Public Policy and Policy Sciences, Public Policy and Public Administration. **Approaches to Public Policy Analysis:** The Process Approach, The Logical Positivist Approach, The Phenomenological Approach, The Participatory Approach and Normative Approach

Unit-II
Theories and Process of Public Policy Making: Theories and Models of Policy Making, Perspectives of Policy Making Process, Institutions of Policy Making.

Unit-III
Policy Implementation and Evaluation: Concept of Policy Implementation, Techniques of Policy Implementation, Concept of Policy Evaluation, Constraints of Public Policy Evaluation

Unit-IV
Introduction of Governance: Definitions, Issues and Controversies, Reinventing Government, Reforming Institutions: The State, Market and Public domain. **State and Governance:** Origin and types of State, Democratic State and Democratic Administration, Neo-Liberalism and Rolling Back State and Governance as Government.

Unit-V
Citizen and Techniques of Governance: Rule of Law and Human Rights, Accountability, Participation, Representation. **Techniques of Governance**: Openness and Transparency, Citizen Charter, Social Audit. **Emerging Trends in Public and Private Governance:** An Overview, Market, Civil Society, Information and Communication Technology.

TEXT AND REFERENCE BOOKS:
1. Introduction to Public Policy- Charles Wheelan, Naked Economics 2010.

2. Birkland Thomas A., (2005), An Introduction to The Policy Process: Theories, Concepts, And Models of Public Policy Making, Armonk; M.E. Sharpe.
3. Anderson J.E., (2006) Public Policy-Making: An Introduction, Boston, Houghton
4. Bardach, Eugene (1977), The Implementation Game: What Happens After a Bill Becomes a Law, Cambridge, MA: MIT.
5. Bell, S., and Hind moor, A. (2009) Rethinking Governance: The Centrality of the State in Modern Society, Cambridge: Cambridge University Bell, Stephen and Andrew Hind moor.
6. Joyee M. Mitchell & William C. Mitchell, Political Analysis & Public Policy: An Introduction to Political Science, Thomson Press Limited, New Delhi, 1972.
7. R.K. Sapru, Public Policy, Art and Craft of policy Analysis, PHI learning private limited, New Delhi, 2011.
8. Brian W. Hogwood & Lewis A. Gunn, Policy Analysis for the Real world, Oxford University, Press, 1986.

COURSE OUTCOMES

After completion of the course, student will be able to

1. Understand public policy analysis and they will be able to understand policy evaluation and implementation.
2. Understand the public policy and governance on the largest gamut of its canvas.
3. Students will understand the what are emerging trends in public and private governance and various theories in public policy making

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II Year B.Tech. CSE- II Sem   L/T/P/C
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(R22A0028) DISCRETE MATHEMATICS

COURSE OBJECTIVES:

1. Describe mathematical concepts as applied in computer science for solving logicalproblems.
2. Understanding the concepts of sets, functions, relations, recurrence relations andLattices.
3. Understand the concepts on elementary combinations and permutations.
4. To develop the mathematical skills needed for advanced quantitative courses.
5. Analyze the properties of graphs and trees.

UNIT – I:
Mathematical Logic: Statements and notations, connectives, well-formed formulas, truth tables, tautology, equivalence implication; Normal forms: Disjunctive normal forms, conjunctive normalforms, principle disjunctive normal forms, principle conjunctive normal forms.
Predicates : Predicative logic, statement functions, variables and quantifiers, free and bound variables, rules of inference, consistency, proof of contradiction, automatic theorem proving.

UNIT – II:
Posets and Lattices : Relations and their properties, Properties of binary relations, equivalence, compatibility and partial ordering relations, lattices, Hasse diagram; Functions-Inverse function,composition of functions, recursive functions.
Lattices as partially ordered sets; Definition and examples, properties of lattices, sub lattices, some special lattices.

UNIT - III :
Groups :Algebraic structure, Groupoid, Monoid, Semi groups, Group ,Sub groups, Homomorphism and Isomorphism of groups.
Elementary Combinatorics : Basics of counting, The permutations, disarrangements, combinations, permutations and combinations with repetitions, constrained repetitions, the principal of Inclusion-Exclusion, Pigeon hole principle.

UNIT-IV :
Advanced Counting Techniques : Generating Function of Sequences, Recurrence relations, Solving Recurrence Relations by substitution and Generating function ,The method of Characteristic roots, Solutions of Inhomogeneous Recurrence Relations.

UNIT-V :
Graphs Theory : Introduction to Graphs ,Isomorphic graphs, Euler graphs, Hamiltonian graphs, Planar graphs, Graph coloring, Directed graphs, Weighted digraphs, chromatic numbers. Trees and their properties, Spanning trees, Directed trees, Binary trees Minimal Spanning Trees.

TEXT BOOKS :

1. L. Liu, D. P. Mohapatra, —Elements of Discrete Mathematics, Tata Mcgraw-Hill, India, 3rdEdition,2008.

2. J. P. Tremblay, R. Manohar, Discrete Mathematical Structures with Applications to Computer Science , Tata McGraw Hill, India, 1st Edition,1997.

3. JoeL.Mott, Abraham Kandel, Theodore P.Baker,—Discrete Mathematics for Computer Scientists and Mathematicians, Prentice Hall of India Learning Private Limited, New Delhi, India, 2nd Edition,2010.

REFERENCE BOOKS :

1. Kenneth H. Rosen, —Discrete Mathematics and Its Applications, Tata Mcgraw-Hill, New Delhi, India, 6thEdition,2012.

2. Ralph P. Grimaldi, B. V. Ramana, —Discrete and Combinatorial Mathematics - An Applied Introduction, Pearson Education, India, 5th Edition,2011.

3. D. S. Malik, M. K. Sen, —Discrete Mathematical Structures: Theory and Applications,Thomson Course Technology, India, 1st Edition,2004.

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

1. Understand Set Theory, Venn Diagrams, relations, functions and apply them to Real-world Scenarios.

2. Understand General properties of Algebraic systems and study lattices as partially ordered sets and their applications.

3. Solve the recurrence relations and can be used to optimize algorithms.

4. Identify the basic properties of graphs and trees and use these concepts to model simple applications

(R22A0507) OBJECT ORIENTED PROGRAMMING THROUGH JAVA

COURSE OBJECTIVES:

1. To understand object oriented principles like abstraction, encapsulation,inheritance,polymorphism and apply them in solving problems.
2. To understand the implementation of packages and interfaces.
3. To understand the concepts of exception handling, multithreading and collection classes.
4. To understand how to connect to the database using JDBC.
5. To understand the design of Graphical User Interface using applets and swing controls.

UNIT-I

Java Programming- History of Java, comments, Java Buzz words, Data types, Variables, Constants, Scope and Lifetime of variables, Operators, Type conversion and casting, Enumerated types, Control flow- block scope, conditional statements, loops, break and continue statements, arrays, simple java stand alone programs, class, object, and its methods constructors, methods, static fields and methods, access control, this reference, overloading constructors, recursion, exploringstring class, garbage collection.

UNIT – II

Inheritance – Inheritance types, super keyword, preventing inheritance, final classes andmethods.

Polymorphism – method overloading and method overriding, abstract classes and methods**. Interfaces-** Interfaces Vs Abstract classes, defining an interface, implement interfaces, accessingimplementations through interface references, extending interface, inner class.

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

UNIT-III

Exception handling-Benefits of exception handling, the classification of exceptions - exception hierarchy, checked exceptions and unchecked exceptions, usage of try, catch, throw, throws andfinally, creating own exception subclasses.

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

UNIT-IV

Collection Framework in Java – Introduction to java collections, Overview of java collection framework, Commonly used collection classes- Array List, Vector, Hash table, Stack, Lambda Expressions.

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

Connecting to Database – JDBC Type 1 to 4 drivers, Connecting to a database, querying a database and processing the results, updating data with JDBC, Data Access Object (DAO).

UNIT-V

GUI Programming with Swing - The AWT class hierarchy, Introduction to Swing, Swing Vs AWT, Hierarchy for Swing components, Overview of some Swing components – Jbutton, JLabel, JTextField, JTextArea, simple Swing applications, Layout management – Layout manager types –border, grid and flow.

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

TEXT BOOK:

1. Java Fundamentals–A Comprehensive Introduction, Herbert Schildt and Dale Skrien,TMH.
2. Core Java: An Integrated Approach – Dr R Nageswara Rao

REFERENCE BOOKS:

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

COURSE OUTCOMES:

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

1. Understand the use of OOP's Concepts.
2. Implement Packages and interfaces in java
3. Develop and Understand exception handling ,multithreaded applications with synchronization
4. Understand the use of Collection Framework
5. Design GUI based applications using AWT and Swings

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II Year B.Tech. CSE- II Sem
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(R22A0508) COMPUTER ORGANIZATION

COURSE OBJECTIVES:

To expose the students to the following:
1. How Computer Systems work & the basic principles
2. Instruction Level Architecture and Instruction Execution
3. The current state of art in memory system design
4. How I/O devices are accessed and its principles.
5. To provide the knowledge on Instruction Level Parallelism

UNIT I

Basic Functional units of Computers: Functional units, basic Operational concepts, Bus structures. Software, Performance, Multiprocessors, Multicomputer. **Data Representation:** Signed number representation, fixed and floating point Representations. **Computer Arithmetic:** Addition and subtraction, multiplication Algorithms, Division Algorithms. Error detection and correction codes.

UNIT II

Register Transfer Language and Micro Operations: RTL- Registers, Register transfers, Bus and memory transfers. Micro operations: Arithmetic, Logic, and Shift micro operations, Arithmetic logic shift unit.

Basic Computer Organization and Design: Computer Registers, Computer instructions, Instruction cycle. Instruction codes, Timing and Control, Types of Instructions: Memory Reference Instructions, Input – Output and Interrupt.

UNIT III

Central Processing Unit organization: General Register Organization, Stack organization, Instruction formats, Addressing modes, Data Transfer and Manipulation, Program Control, CISC and RISC processors

Control unit design: Design approaches, Control memory, Address sequencing, micro program example, design of CU, Micro Programmed Control.

UNIT IV

Memory Organization: Semiconductor Memory Technologies**,** Memory hierarchy, Interleaving, Main Memory-RAM and ROM chips, Address map, Associative memory-Hardware organization. Match logic. Cache memory-size vs. block size, Mapping functions-Associate, Direct, Set Associative mapping. Replacement algorithms, write

policies. Auxiliary memory- Magnetic tapes etc.

UNIT V
Input –Output Organization: Peripheral devices, Input-output subsystems, I/O device interface, I/O Processor, I/O transfers–Program controlled, Interrupt driven, and DMA, interrupts and exceptions. I/O device interfaces – SCII, USB

Pipelining and Vector Processing: Basic concepts, Instruction level Parallelism Throughput and Speedup, Pipeline hazards.

TEXT BOOKS:
1. Computer Organization – Carl Hamacher, Zvonks Vranesic, SafeaZaky, Vth Edition, McGraw Hill.
2. Computer Systems Architecture – M.Moris Mano, IIIrd Edition, Pearson/PHI

REFERENCE BOOKS:
1. "Computer Architecture and Organization", 3rd Edition by John P. Hayes, WCB/McGraw-Hill
2. "Computer Organization and Architecture: Designing for Performance", 10th Edition by William Stallings, Pearson Education.
3. "Computer System Design and Architecture", 2nd Edition by Vincent P. Heuring and Harry F. Jordan, Pearson Education.

COURSE OUTCOMES:
After completion of the course, Students will be able to:
1. Student will learn the concepts of computer organization for several engineeringapplications.
2. Student will develop the ability and confidence to use the fundamentals of computerorganization as a tool in the engineering of digital systems.
3. An ability to identify, formulate, and solve hardware and software computer engineeringproblems using sound computer engineering principle
4. To impart the knowledge on micro programming
5. Comprehend the concepts of advanced pipelining techniques

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II Year B.Tech. CSE- II Sem   **L/T/P/C**

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(R22A0509) OPERATING SYSTEM

COURSE OBJECTIVES:
1.   To understand the fundamental concepts and techniques of Operating Systems.
2.   To study the concepts of LINUX OS and process scheduling.
3.   To understand the concepts in deadlocks and process management.
4.   To understand the techniques in memory managements and IPC mechanism.
5.   To study file system concepts and sockets.

UNIT - I
Operating System-Introduction, Structures-Simple Batch, Multi-programmed, Time-shared, Personal Computer, Parallel, Distributed Systems, Real-Time Systems, System components, Operating System services.
Introduction to Linux operating system, Linux file system, Linux Utilities

UNIT - II
Linux: Introduction to shell, Types of Shell's, example shell programs.
Process and CPU Scheduling - Process concepts and scheduling, Operations on processes, Cooperating Processes, Threads, Scheduling Criteria, Scheduling Algorithms, Multiple - Processor Scheduling.

UNIT - III
Deadlocks - System Model, Deadlocks Characterization, Methods for Handling Deadlocks, Deadlock   Prevention, Deadlock Avoidance, Deadlock Detection and Recovery from Deadlock
Process Management and Synchronization - The Critical Section Problem, Synchronization Hardware, Semaphores, and Classical Problems of Synchronization, Critical Regions, Monitors.

UNIT - IV
Inter process Communication Mechanisms: IPC between processes on a single computer system, IPC between processes on different systems, using pipes, FIFOs, message queues, shared memory implementation in Linux. Corresponding system calls.
Memory Management and Virtual Memory - Logical versus Physical Address Space, Swapping, Contiguous Allocation, Paging, Segmentation, Segmentation with Paging, Demand Paging, Page Replacement, Page Replacement Algorithms.

UNIT - V
File System Interface and Operations -Access methods, Directory Structure, Protection, File System Structure, Allocation methods, kernel support for files, system calls for file I/O operations open, create, read, write, close, lseek, stat, ioctl
Disk Management: Disk Scheduling Algorithms-FCFS, SSTF, SCAN, C-SCAN

TEXT BOOKS:

1. Beginning Linux Programming –Neil Mathew, Richard Stones 4th Edition, Wiley
2. Operating System Principles- Abraham Silberschatz, Peter B. Galvin, Greg Gagne 7th Edition, John Wiley
3. Unix System Programming using C++, T. Chan, PHI.
4. Unix Concepts and Applications, 4th Edition, SumitabhaDas,TMH,2006.
5. Advanced programming in the UNIX environment, W.R. Stevens, Pearson education.

REFERENCE BOOKS:

1. Operating Systems – Internals and Design Principles Stallings, Fifth Edition–2005, Pearson Education/PHI
2. Operating System A Design Approach- Crowley, TMH.
3. Modern Operating Systems, Andrew S. Tanenbaum 2nd edition, Pearson/PHI
4. UNIX programming environment, Kernighan and Pike, PHI/ Pearson Education
5. UNIX Internals -The New Frontiers, U. Vahalia, Pearson Education.

COURSE OUTCOMES:

At the end of the course students should have:

1. Ability to apply concepts of operating system.
2. Ability to write shell programs and simulate process scheduling algorithms.
3. Skills to analyze memory management and deadlocks situations.
4. An ability to develop programs using system calls and utilities.
5. Capability to compare various file systems.

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II Year B.Tech. CSE- II Sem   **L/T/P/C**
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(R22A0510) FORMAL LANGUAGE AND AUTOMATA THEORY

COURSE OBJECTIVES:
1. Understand mathematical models (finite automata) for language processing.
2. Explain Regular Expressions and Finite Automata Conversions.
3. Understand Grammars for Regular and Context Free Languages.
4. Learn Context Free Grammar Normal Forms and Push Down Automata.
5. Explain Computational theory and different models.

UNIT I
Fundamentals: Strings, Alphabet, Language, Operations, Finite state machine, definitions, finite automaton model, acceptance of strings and languages, deterministic finite automaton and nondeterministic finite automaton, transition diagrams and language recognizers.
Finite Automata: NFA with ϵ transitions - significance, acceptance of languages. Conversions and Equivalence: Equivalence between NFA with and without ϵ transitions, NFA to DFA conversion, minimization of FSM, equivalence between two FSM's, Finite Automata with output- Moore andMealy machines.

UNIT II
Regular Languages: Regular sets, regular expressions, identity rules, Constructing finite automata for a given regular expressions, Conversion of finite automata to Regular expressions, Pumping lemma of regular sets, closure properties of regular sets.

UNIT III
Grammar Formalism: Introduction, **Regular grammars**-right linear and left linear grammars, equivalence between regular grammar and FA, inter conversion, **Context free grammars**- Derivation trees, sentential forms, Right most and leftmost derivation of strings.

UNIT IV
Optimization and Normalization: Ambiguity in context free grammars, optimization of context free grammars, Chomsky normal form, Greibach normal form, Pumping Lemma for Context FreeLanguages, Enumeration of properties of CFL.
Push Down Automata: Push down automata, definition, model, acceptance of CFL, Acceptance by final state and acceptance by empty stack and its equivalence, equivalence of CFL and PDA, inter conversion, Introduction to DCFL and DPDA.
Context sensitive grammars, languages and Linear bounded Automata.(Definitions)

UNIT V
Turing Machine: Unrestricted grammars, Turing Machine-definition, model, design of TM, computable functions, Turing recognizable (Recursively enumerable) and Turing-

decidable (recursive) languages and their closure properties, Church's hypothesis, counter machine, typesof Turing machines.

Computability Theory: Chomsky hierarchy of languages, LR(0) grammar, decidability of problems, Universal Turing Machine, un decidability of posts correspondence problem, Turing reducibility, definition of P and NP problems, NP complete and NP hard problems.

TEXT BOOKS
1. John E. Hopcroft, Rajeev Motwani and Jeffrey D. Ullman, Introduction to Automata Theory,Languages, and Computation, Pearson Education Asia.

REFERENCE BOOKS:

1. Harry R. Lewis and Christos H. Papadimitriou, Elements of the Theory of Computation,Pearson Education Asia.
2. Dexter C. Kozen, Automata and Computability, Undergraduate Texts in Computer Science,Springer.
3. Michael Sipser, Introduction to the Theory of Computation, PWS Publishing.
4. John Martin, Introduction to Languages and The Theory of Computation, TataMcGrawHill.

COURSE OUTCOMES:

By the end of this course, students will be able to

1. Design Finite Automata models for language acceptance.
2. Construct Regular Expressions and equivalent automata models.
3. Formulate Grammars for different types of formal languages.
4. Represent Normal Forms and design Push Down Automata.
5. Experiment with and Analyze different Computational models

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

II Year B.Tech. CSE-II Sem   **L/T/P/C**

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(R22A0586) OBJECT ORIENTED PROGRAMMINGTHROUGH JAVA LAB

COURSE OBJECTIVES:
1. To prepare students to become familiar with the Standard Java technologies ofJ2SE
2. 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, JavaScript
3. 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.
4. To inculcate in students professional and ethical attitude, multidisciplinary approach and an ability to relate java programming issues to broader application context.
5. To provide student with an academic environment aware of excellence, written ethical codes and guidelines and lifelong learning needed for a successful professional career

Week 1:
a) Write a java program to find the Fibonacci series using recursive and non-recursive functions
b) Write a program to multiply two given matrices.
c) Write a program for Method overloading and Constructor overloading

Week 2:
a) Write a program to demonstrate execution of static blocks ,static variables & static methods.
b) Write a program to display the employee details using Scanner class
c) Write a program for sorting a given list of names in ascending order

Week 3:
a) Write a program to implement single and Multi level inheritance
b) Write a program to implement Hierarchical Inheritance.
c) Write a program to implement method overriding.

Week 4:
a) Write a   program to create an abstract class named Shape that contains two integers and an empty method named printArea (). Provide three classes named Rectangle, Triangle and Circle such that each one of the classes extends the class Shape. Each one of the classes contains only the method printArea () that prints the area of the given shape.
b) Write a   program to implement Interface .
c) Write a program to implement multiple and Hybrid Inheritance

Week 5:
a)Write a program to create inner classes
b)Write a program to create user defined package and demonstrate various access modifiers.
c) Write a program to demonstrate the use of super and final keywords.

Week 6 :
   a)Write a program if number is less than 10 and greater than 50 it generate the exception out of range. else it displays the square of number.
   b)Write a program with multiple catch Statements.
   c) write a program to implement nested try

Week 7:
   a) Write a   Program to implement simple Thread by extending Thread class and implementing runnable interface.
   b) Write a program that implements a multi-thread application that has three threads
   c) write a program to set and print thread priorities

Week 8:
   Write a program to implement following collections
   a)array List   b) Vector   c)Hash table   d)Stack

Week 9:
   a) Write a program to demonstrate lambda expressions.
    b)Write a   program for producer and consumer problem using Threads

Week 10:
    a)Write a program to list all the files in a directory including the files present in all its subdirectories.
   b)Write a Program to Read the Content of a File Line by Line

Week 11:
   a)Write a program that connects to a database using JDBC display all records in a table.
   b)Write a program to connect to a database using JDBC and insert values into it.
   c)Write a program to connect to a database using JDBC and delete values from it

Week 12:
   Write a   program that works as a simple calculator. Use a Grid Layout to arrange Buttons for digits and for the + - * % operations. Add a text field to display the result.

   COURSE OUTCOMES:
   Upon successful completion of this course, the students will be able to:
   1. Analyze the necessity for Object Oriented Programming paradigm and over structured programming and become familiar with the fundamental concepts in OOP.
   2. Demonstrate an ability to design and develop Java programs, analyze, and interpret objectoriented data and report results.
   3. Analyze the distinguish between various types of inheritance.
   4. Demonstrate an ability to design an object oriented system, AWT components ormultithreaded process as per needs and specifications.
   5. Demonstrate an ability to visualize and work on laboratory and multidisciplinary tasks likeconsole and windows applications for standalone programs.

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

II Year B.Tech. CSE-II Sem   **L/T/P/C**

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(R22A0587) OPERATING SYSTEMS LAB

OBJECTIVES:

1. To provide an understanding of the design aspects of operating system concepts through simulation
2. Introduce basic Linux commands, system call interface for process management, inter-process communication and I/O in Unix.
3. Student will learn various process and CPU scheduling Algorithms through simulation programs
4. Student will have exposure to System calls and simulate them.
5. Student will learn deadlocks and process management & Inter Process communication and simulate

WEEK1:
Practice File handling utilities, Process utilities, Disk utilities, Networking commands, Filters, Text processing utilities and Backup utilities.

WEEK2:
Write a shell script that receives any number of file names as arguments checks if every argument supplied is a file or directory and reports accordingly. Whenever the argument is a file it reports no of lines present in it.

WEEK3:
Simulate the following CPU scheduling algorithms. a) FCFS b) SJF c) Round Robin
d) Priority.

WEEK4:
Simulate Bankers Algorithm for Dead Lock Avoidance; Simulate Bankers Algorithm for Deadlock Prevention.

WEEK5:
a) Write a C program to simulate the concept of Dining-philosophers problem.
b) Write a C program to simulate producer-consumer problem using Semaphores

WEEK6:
a) Write a C program to implement kill(),raise()and sleep()functions.
b) Write a C program to implement alarm(),pause()and abort()functions
c) Write a program that illustrate communication between two process using unnamed pipes

WEEK7:

a) Write a program that illustrates communication between two process using named pipes or FIFO.

b) Write a C program that receives a message from message queue and display them.

WEEK8:

Write a C program that illustrates two processes communicating using Shared memory.

WEEK9:

Simulate all page replacement algorithms a) FIFO b) LRU   c) OPTIMAL

WEEK10:

Write a C program that takes one or more file/directory names as command line input and reports following information A)File Type B)Number Of Links C)Time   of last Access D)Read, write and execute permissions

WEEK11

a) Implement In c language the following UNIX commands using system calls i)cat ii)ls iii) Scanning Directories(Ex: open dir(), read dir(),etc.)

b) Write a C program to create child process and allow parent process to display "parent" and the child to display "child" on the screen

WEEK12:

Write a C program to simulate disk scheduling algorithms. a) FCFS b) SCAN c) C-SCAN

TEXT BOOKS:

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

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

REFERENCE BOOKS:

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

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

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

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

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

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

II Year B.Tech. CSE- II Sem   L/T/P/C
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(R22A0005) FOREIGN LANGUAGE-FRENCH

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

1. To inculcate the basic knowledge of the French language
2. To hone the basic sentence constructions in day to day expressions for communication intheir vocation
3. To form simple sentences that aids in day-to-day communication
4. To prepare the students towards DELF A1
5. To develop in the student an interest towards learning languages.

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 andpreferences - express possession - express negation

Writing: Write and understand a short message

Grammar: Nouns (gender and number) - Articles - The–erverbs in the present-Possessiveadjectives - Qualifying adjectives

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

UNIT - III

Speaking: Talk about your daily activities - be in time - ask and indicate the date and time - talk about sports and recreation - express the frequency

Writing: A letter to a friend

Grammar: The expression of time– The –ir 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 (Coursebook) By Livid Language
5. Ã L'Aventure: An Introduction to French Language and Francophone Cultures by EvelyneCharvier-Berman, Anne C. Cummings.

COURSE OUTCOMES

1. The students will be able to communicate in French at A1 level.
2. The student will have an advantage in the competitive job market.
3. This course benefits the graduates when pursuing study *opportunities* in the countrieswhere French is the official language