MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF AERONAUTICAL ENGINEERING

COURSE STRUCTURE

I Year B. Tech – I Semester

S.No	Subject Code	SUBJECT	L	T	P	C	MAX. MARKS	
							INT	EXT
1	R20A0001	English	2	0	0	2	30	70
2	R20A0021	Mathematics – I	3	1	0	4	30	70
3	R20A0012	Engineering Physics	3	0	0	3	30	70
4	R20A0013	Advanced Material Chemistry	3	0	0	3	30	70
5	R20A0501	Programming for Problem Solving	3	0	0	3	30	70
6	R20A0083	Engineering and IT Workshop	-	0	2	1	30	70
7	R20A0082	Engineering Physics Lab	-	0	3	1.5	30	70
8	R20A0581	Programming for Problem Solving Lab	-	0	3	1.5	30	70
9	R20A0014	Financial Institutions, Markets and Services	1	-	-	1	100	-
		Total	**15**	**1**	**8**	**20**	**340**	**560**

I Year B. Tech – II Semester

S.No	Subject Code	SUBJECT	L	T	P	C	MAX. MARKS	
							INT	EXT
1	R20A0002	Professional English	2	0	0	2	30	70
2	R20A0022	Mathematics – II	3	1	0	4	30	70
3	R20A0261	Basic Electrical and Electronics Engineering	3	0	0	3	30	70
4	R20A0301	Engineering Graphics	2	0	2	3	30	70
5	R18A0502	Python Programming	3	0	0	3	30	70
6	R20A0081	English Language Communication Skills Lab	-	0	2	1	30	70
7	R20A0289	Basic Electrical and Electronics Engineering Lab	-	0	3	1.5	30	70
8	R20A0582	Python Programming Lab	-	0	3	1.5	30	70
9	R20A0003	Human Values and Professional Ethics	1	0	0	1	100	-
		Total	**14**	**1**	**10**	**20**	**340**	**560**

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

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

2 /- /- /2

(R20A0001) 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 the skills.

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 designed syllabus.
3. To familiarize students with the principles of writing and to ensure error-free writing
4. To sharpen the speaking skills of learners by involving them in diverse activities such as group discussions, debates, conversations and role plays.
5. To train students in soft skills with the help of case studies.

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 inferences etc.,
    - Skimming the text
    - Understanding the gist of an argument
    - Identifying the topic sentence
    - Inferring lexical and contextual meaning
    - Understanding discourse features
    - Recognizing coherence/sequencing of sentences
    - Scanning the text

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 writing skills.
2. To equip students with the components of different forms of writing, beginning with the required ones:
    - Writing sentences
    - Use of appropriate vocabulary
    - Coherence and cohesiveness
    - Formal and informal letter writing

Unit –I
"The Road not taken" by Robert Frost
Grammar – Tenses and Punctuation (Sequences of Tenses)
Vocabulary – Word Formation - Prefixes and Suffixes
Writing –Paragraph Writing (Focusing on Tenses and Punctuations)
Reading –The art of skimming and scanning -Reading Exercise Type 1
(Match the statements to the text they refer to)

Unit – II
"Abraham Lincoln's Letter to His Son's Teacher"
Grammar – Direct and Indirect Speech
Vocabulary – Synonyms, Antonyms
Writing – Essay Writing (Introduction, body and conclusion)
Reading – Comprehending the context– Reading Exercise Type 2
(Place the missing statement)

Unit – III
Satya Nadella's Email to His Employees on his First Day as CEO of Microsoft
Grammar – Voices
Vocabulary – One-Word Substitutes, Standard Abbreviations
Writing – E-mail Writing, Letter Writing (complaints, requisitions, apologies).
Reading – Reading Comprehension- Reading Exercise Type 3
(Reading between the lines)

Unit – IV
J K Rowling's Convocation Speech at Harvard
Grammar – Articles, Misplaced Modifiers
Vocabulary – Phrasal Verbs
Writing – Précis Writing
Reading – Reading Exercise Type 4
(Cloze test)

Unit –V

Abdul Kalam's Biography

Grammar	–	Subject-Verb Agreement, Noun-Pronoun Agreement
Vocabulary	–	Commonly Confused Words
Writing	–	Memo Writing
Reading	–	Reading Exercise Type 5 (Identifying errors)

* 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. On Writing Well. William Zinsser. Harper Resource Book. 2001
4. Study Writing. Liz Hamp-Lyons and Ben Heasly. Cambridge University Press. 2006.
5. Communication Skills. Sanjay Kumar and Pushpa Lata. Oxford University Press. 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 the same
2. Hone their language abilities in terms of comprehending complex technical texts with a potential to review literature
3. Present ideas clearly and logically to analyze data and provide valid conclusions in written communication
4. Enrich their grammatical accuracy and fluency to be adept at both the active and passive skills
5. Represent old conventions with a set of the new by professional verbal communicative ability.

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

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

3/1/-/4

(R20A0021) MATHEMATICS –I

COURSE OBJECTIVES:

To Learn

1. The concept of a Rank of the matrix and applying the concept to know the consistency and solving the system of linear equations.
2. The concept of Eigen values, Eigen vectors and Diagonalization.
3. The maxima and minima of functions of several variables.
4. The Applications of first order ordinary differential equations and methods to solve higher order differential equations.
5. The properties of Laplace Transform, Inverse Laplace Transform and Convolution theorem.

UNIT I: Matrices

Introduction, Rank of a matrix - Echelon form, Normal form, Consistency of system of linear equations (Homogeneous and Non-Homogeneous)-Gauss-Siedel method, Linear dependence and independence of vectors, Eigen values and Eigen vectors and their properties (without proof), Cayley-Hamilton theorem (without proof), Diagonalization of a matrix.

UNIT II: 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 III: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 IV: 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 to linear ODE with constant coefficients-Cauchy's Euler equation and Legendre's equation.

UNIT V: Laplace Transforms

Definition of Laplace transform, domain of the function and Kernel for the Laplace transforms, Existence of Laplace transform, Laplace transform of standard functions, first shifting Theorem, Laplace transform of functions when they are multiplied and divided by "t", Laplace transforms of derivatives and integrals of functions, Unit step function, Periodic function.

Inverse Laplace transform by Partial fractions, Inverse Laplace transform of functions when they are multiplied and divided by" s", Inverse Laplace Transforms of derivatives and integrals of functions, Convolution theorem, Solving ordinary differential equations by Laplace transform.

TEXT BOOKS

1. Higher Engineering Mathematics by B V Ramana., Tata McGraw Hill.
2. Higher Engineering Mathematics by B.S. Grewal, Khanna Publishers.
3. Advanced Engineering Mathematics by Kreyszig, JohnWiley &Sons.

REFERENCE BOOKS

1. Advanced Engineering Mathematics by R.K Jain & S R K Iyenger, Narosa Publishers.
2. Ordinary and Partial Differential Equations by M.D. Raisinghania, S.Chand Publishers
3. 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 solutions of the system of linear equations and find the Eigen values and Eigen vectors of a matrix, which are used to analyze the long-term behavior of any system.
2. Find the extreme values of functions of two variables with / without constraints.
3. Solve first order, first degree differential equations and their applications.
4. Form a differential equation for typical engineering problems and hence can solve those higher order differential equations.
5. Solve differential equations with initial conditions using Laplace Transformation.

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

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

3/-/-/3

(R20A0012) ENGINEERING PHYSICS

COURSE OBJECTIVES

1. To gain the knowledge on the basic concepts of oscillations exhibited by various systems in nature.
2. To Study the basic concepts of light through interference and diffraction.
3. To explore band structure of the solids and classification of materials.
4. To Compare dielectric and magnetic properties of the materials and enable them to design and apply in different fields.
5. To analyze the ordinary light with a laser light and realize the transfer of light through optical fibers.

UNIT – I: HARMONIC OSCILLATIONS

Introduction to harmonic oscillators, simple harmonic oscillator: equation of motion and its solution (complex exponential method), damped harmonic oscillator: equation of motion and its solution, over, critical and lightly-damped oscillators; energy decay in damped harmonic oscillator, Quality factor (qualitative), forced damped harmonic oscillator: equation of motion and its solution.

UNIT – II: WAVEOPTICS

Interference- Introduction, Superposition of waves, interference of light by division of wave front-interference of reflected light in thin films, interference of light by division of amplitude- Newton's rings, Diffraction- difference between Fresnel and Fraunhofer diffraction, Fraunhofer diffraction due to single slit, Diffraction grating- Grating spectrum and resolving power.

UNIT- III: INTRODUCTION TO SOLIDS

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

UNIT – IV: DIELECTRICS AND MAGNETIC PROPERTIES OF MATERIALS

Dielectrics: Introduction, Types of polarizations (Electronic and Ionic) and calculation of their polarizabilities, internal fields in a solid, Clausius-Mossotti relation.

Magnetism: Introduction, Bohr magneton, classification of dia, para and ferro magnetic materials on the basis of magnetic moment, Properties of anti-ferro and ferri magnetic materials, Hysteresis curve based on Domain theory of ferro magnetism, Soft and hard magnetic materials.

UNIT-V: LASERS AND FIBER OPTICS:

LASERS: Characteristics of lasers, Absorption, Spontaneous and Stimulated emissions, Einstein's Coefficients, population inversion, meta stable state, types of pumping, lasing action, construction and working of Ruby Laser, Helium-Neon Laser,CO_2 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 Propagation through step and graded index fibers, Attenuation in optical fiber, Optical Fiber in Communication System, Applications of optical fibers

TEXT BOOKS:

1. Engineering Physics by Arumugam, Anuradha publications.
2. 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.

COURSE OUTCOMES:

After completion of studying Engineering Physics the student is able to,

1. Analyze the various oscillations made by different oscillating bodies in nature.
2. Design different devices to go to maximum accuracy in measuring the dimensions optically.
3. Find the importance of band structure of solids and their applications in various electronic devices.
4. Examine dielectric, magnetic properties of the materials and apply them in material technology.
5. Observe the properties of light and its engineering applications of laser in fiber optic communication systems.

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

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

3/-/-/3

(R20A0013) ADVANCED MATERIAL CHEMISTRY

COURSE OBJECTIVES

The students will be able to

1. Apply the electrochemical principles for construction of batteries and fuel cells.
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. Explain the principles and applications of photochemistry in engineering field.

UNIT-I: Electrochemistry

Introduction-Electrochemical cells - electrode potentials, construction and working of a galvanic cell, EMF and its applications - potentiometric titration; Nernst equation and its applications; electrochemical series and its applications. Batteries-classification of batteries, primary cell - lithium cells; secondary cells - lead acid battery and lithium ion battery; Fuel cells - H_2-O_2fuel cell; applications and advantages of fuel cells.

UNIT-II: Corrosion

Introduction-Causes and effects of corrosion; Theories of corrosion- chemical (oxidation corrosion) and electrochemical corrosion, Corrosion control methods - cathodic protection - sacrificial anodic protection and impressed current cathodic protection; protective coatings-galvanizing and tinning, electroplating (Cu plating) and electroless plating (Ni plating) - advantages and applications of electroplating/electroless plating.

Unit III: Functional Materials

Polymers: Introduction-thermoplastic and thermosetting resins, preparation, properties and engineering applications of Polyvinylchloride (PVC), Teflon (PTFE), Polymethyl methacrylate (PMMA), Polycarbonate, Bakelite. Conducting polymers-classification of conducting polymers-conduction mechanism in polyacetylene and applications of conducting polymers.

Composite materials: Introduction-Fiber reinforced plastics (FRPs)-Glass fiber reinforced, Carbon fiber reinforced plastics and their applications.

Unit IV Advanced Materials

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

Smart materials: Introduction-types of smart materials-examples and applications of piezoelectric materials, shape memory alloys, magneto strictive materials and electro strictive materials.

Unit V Photochemistry

Introduction- Laws of photochemistry- Stark-Einstein law, Beer-Lambert's law, photochemical processes - Jablonsky diagram, applications of fluorescence, phosphorescence and photo sensitization.

Text Books:

1. Engineering Chemsitry 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. Principles and Applications of Photochemistry by Brian Wardle Manchester Metropolitan University, Manchester, UK, A John Wiley & Sons, Ltd., Publication, 2009.
4. 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.,46th edition (2013).

COURSE OUTCOMES:

After completion of the course, the student will be able to

1. Relate the knowledge of operating principles of various types of electrochemical cells, including fuel cells and 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. Evaluate the photochemical and photo physical processes to reach substantiated conclusions in the technological arena.

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

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

3/-/-/3

(R20A0501) PROGRAMMING FOR PROBLEM SOLVING

COURSE OBJECTIVES:

Students will be able to

1. Understand the use of computer system in problem solving and to build program logic with algorithms and flowcharts.
2. Explain the features and constructs of C programming such as data types, expressions Loops, arrays, strings and pointers
3. Learn how to write modular Programs using Functions
4. Understand the use of Structures, Unions and Files
5. Use basic data structures like stacks, queues and linked lists in designing applications

UNIT - I

Introduction to Computing – Computer Systems, Computing Environments, Computer Languages, Algorithms and Flowcharts, Steps for Creating and Running programs.
Introduction to C – History of C, Features of C, Structure of C Program, Character Set,
C Tokens - keywords, Identifiers, Constants, Data types, Variables. Operators, Expressions, Precedence and Associativity, Expression Evaluation, Type conversion, typedef, enum
Control Structures: Selection Statements(Decision Making) – if and switch statements, Repetition Statements (Loops) - while, for, do-while statements, Unconditional Statements – break, continue, goto.
Command line arguments

UNIT-II

Pointers – Pointer variable, pointer declaration, Initialization of pointer, accessing variables through pointers, pointer arithmetic, pointers to pointers, void pointers
Arrays – Definition, declaration of array, Initialization, storing values in array, two dimensional arrays, Multi-dimensional arrays. Arrays and Pointers, Array of pointers
Strings – Declaration and Initialization, String Input / Output functions, Array of strings, String manipulation functions, Unformatted I/O functions, strings and pointers

UNIT-III

Designing Structured Programs using Functions - Types of Functions- user defined functions, Standard Functions, Categories of functions, Parameter Passing techniques, Scope – Local Vs Global, Storage classes, Recursive functions.
Passing arrays as parameters to functions, Pointers to functions, Dynamic Memory allocation.

UNIT-IV

Structures and Unions - Declaration, initialization, accessing structures, operations on structures, structures containing arrays, structures containing pointers, nested structures, self referential structures, arrays of structures, structures and functions, structures and pointers, unions..

Files – Concept of a file, Streams, Text files and Binary files, Opening and Closing files, File input / output functions. Sequential Access and Random Access Functions.

UNIT-V

Basic Data Structures – Linear and Non Linear Structures – Implementation of Stacks, Queues, Linked Lists and their applications.

Case Studies

Case 1: Student Record Management System

The main features of this project include basic file handling operations; you will learn how to add, list, modify and delete data to/from file.

Currently, listed below are the only features that make up this project, but you can add new features as you like to make this project a better one!

- Add record
- List record
- Modify record
- Delete record

Case 2: Library Management System

This project has 2 modules.

1. Section for a librarian
2. Section for a student

A librarian can add, search, edit and delete books. This section is password protected. That means you need administrative credentials to log in as a librarian.

A student can search for the book and check the status of the book if it is available.

Here is list of features that you can add to the project.

1. You can create a structure for a student that uniquely identify each student. When a student borrows a book from the library, you link his ID to Book ID so that librarian can find how burrowed particular book.
2. You can create a feature to bulk import the books from CSV file.
3. You can add REGEX to search so that a book can be searched using ID, title, author or any of the field.
4. You can add the student login section.

TEXT BOOKS:

1. Mastering C, K.R.Venugopal, S R Prasad, Tata McGraw-Hill Education.
2. Computer Science: A Structured Programming Approach Using C, B.A.Forouzan and R.F. Gilberg, Third Edition, Cengage Learning
3. Data Structures and Algorithms Made Easy by Narasimha Karumanchi, Career Monk publications, 2017

REFERENCE BOOKS:

1. The C Programming Language, B.W. Kernighan and Dennis M.Ritchie, PHI.
2. Computer Programming, E.Balagurusamy, First Edition, TMH.
3. C and Data structures – P. Padmanabham, Third Edition, B.S. Publications.
4. Programming in C, Ashok Kamthane. Pearson Education India.
5. Data Structures using C by Aaron M. Tenenbaum, Pearson Publications
6. Data Structures using C by Puntambekar

COURSE OUTCOMES:

At the end of the course the student will be able to

1. Understand a problem and build an algorithm/flowchart to solve it
2. Construct C programs using various control statements, arrays and pointers
3. Understand the concept of subprograms and recursion
4. Develop programs using structures and unions for storing dissimilar data items
5. Make use of files and file operations to store and retrieve data.

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

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

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(R20A0083) ENGINEERING AND IT WORKSHOP

It is consisting of 2 parts: **Part I: IT Workshop**
Part II: Engineering Workshop

COURSE OBJECTIVES:

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

Part I: IT 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: LIBRE OFFICE

Overview of LibreOffice and its features of Writer, Calc, Impress, Draw, Base, Math, Charts.
Libre office Math: Introduction, Creating & Editing Formulas, formulas as separated documents or files, formulas in office document, Creating formulas, Formula layout
Libre Office Draw: Introduction, Basic shapes, working with objects, flowcharts, organization charts.

PART II: ENGINEERING WORKSHOP

A. List of Experiments:

1. Residential house wiring using switches, fuse, indicator, lamp and energy meter.
2. Illumination wiring
3. Stair case wiring
4. Soldering and Desoldering practice – components, devices and circuits using general purpose PCB.

B. 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.

Trades to demonstrate:

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

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
3. Libre Office Documentation: https://documentation.libreoffice.org/en/english-documentation

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:

1. Ability to identify, assemble and troubleshoot the major components of a computer and perform the installation of Operating System.
2. Capacity to make effective usage of the internet for academics and develop professional documents, spreadsheets and presentations.
3. Students will be able to understand the domestic, illumination, stair-case wiring procedures and soldering de soldering practice
4. The student will have hands-on experience on manufacturing of components using different trades of engineering processes
5. 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 AND TECHNOLOGY

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

-/-/3/1.5

(R20A0082) ENGINEERING PHYSICS LAB

COURSE OBJECTIVES

Students can be able to,

1. Identify the specific types of elastic and electrical nature of materials in physics lab.
2. Observe concepts of magnetism in physics lab.
3. Analyze propagation of light in various optical devices practically.
4. Examine various opto electronic devices practically

LIST OF EXPERIMENTS:

1. Torsional pendulum-Rigidity modulus of given wire.
2. Melde's experiment –Transverse and Longitudinal modes.
3. Stewart and Gee's method- Magnetic field along the axis of current carrying coil.
4. Spectrometer-Dispersive power of the material of a prism
5. Diffraction grating-using laser -Wave length of light.
6. Newton's Rings –Radius of curvature of Plano convex lens.
7. LED -Characteristics of LED.
8. LCR Circuit- To determine quality factor and resonant frequency of LCR circuit.
9. Optical fiber: Evaluation of numerical aperture of optical fiber.
10. Optical fiber: To determine the bending losses of Optical fibers.

Reference practical physics books:

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

COURSE OUTCOMES:

After completion of the course, students will be able

1 To measure the elastic constants of the given material of the wire and also determine the ac frequency of vibrating bar.

2 To determine the magnetic induction of a circular coil carrying current by applying the principles of terrestrial magnetism.

3 To frame relativistic ideas of light phenomenon

4 To achieve the analysis of V-I characteristics of opto electronic devices

5 To determine the numerical aperture of optical fiber.

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

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

-/-/3/1.5

(R20A0581) PROGRAMMING FOR PROBLEM SOLVING LAB

Program Objectives:

1. To understand the various steps in Program development.
2. To understand the basic concepts in C Programming Language.
3. To learn how to write modular and readable C Programs.
4. To learn to write programs (using structured programming approach) in C to solve problems.
5. To introduce basic data structures such as lists, stacks and queues.

Week 1:

a. Write a program to find sum and average of three numbers
b. Write a program to calculate simple interest(SI) for a given principal (P), time (T), and rate of interest (R) (SI = P*T*R/100)

Week 2:

a. Write a program to swap two variables values with and without using third variable
b. Write a program to find the roots of a quadratic equation.

Week 3:

a. Write a program to find the sum of individual digits of a given positive integer.
b. Write a 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)

Week 4:

a. Write a program to find both the largest and smallest number in a list of integers.
b. Write a program to find the sum of integer array elements using pointers

Week 5:

a. Write a program to perform addition of two matrices.
b. Write a program to perform multiplication of two matrices.

Week 6:

a. Write a program to find the length of the string using Pointer.
b. Write a program to count the number of lines, words and characters in a given text.

Week 7:

a. Write a program to find factorial of a given integer using non-recursive function and recursive function.
b. Write program to find GCD of two integers using non-recursive function and recursive function.

Week 8:

a. Write a program using user defined functions to determine whether the given string is palindrome or not.
b. Write a Program to swap the values of two variables using
i) Call by Value ii) Call by Reference

Week 9:

a. Write a program to find the sum of integer array elements using pointers, use dynamic memory allocation to allocate memory.
b. Write a program to perform subtraction of two matrices, Design functions to perform read, display and subtract

Week 10:

a. Write a program to create a structure named book and display the contents of a book.
b. Write a Program to Calculate Total and Percentage marks of a student using structure.

Week 11:

a. Write a program that uses functions to perform the following operations:
i) Reading a complex number ii) Writing a complex number
iii) Addition of two complex numbers iv) Multiplication of two complex numbers
b. Write a program to reverse the first n characters in a file.
(Note: The file name and n are specified on the command line.)

Week 12:

a. Write a program to copy the contents of one file to another.
b. Write a 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.

Week 13:

a. Write a program for static implementation of stack
b. Write a program for static implementation of Queue

Week 14:

a. Write a program to perform various operations on single list

Week 15:

a. Write a program for dynamic implementation of stack
b. Write a program for Dynamic implementation of Queue

Case Studies

Case 1: Student Record Management System

The main features of this project include basic file handling operations; you will learn how to add, list, modify and delete data to/from file. The source code is relatively short, so thoroughly go through the mini project, and try to analyze how things such as functions, pointers, files, and arrays are implemented.

Currently, listed below are the only features that make up this project, but you can add new features as you like to make this project a better one!

- Add record
- List record
- Modify record
- Delete record

Case 2: Library Management System

This project has 2 modules.

1. Section for a librarian
2. Section for a student

A librarian can add, search, edit and delete books. This section is password protected. That means you need administrative credentials to log in as a librarian.

A student can search for the book and check the status of the book if it is available. Here is list of features that you can add to the project.

1. You can create a structure for a student that uniquely identify each student. When a student borrows a book from the library, you link his ID to Book ID so that librarian can find how a particular book is borrowed.
2. You can create a feature to bulk import the books from CSV file.
3. You can add REGEX to search so that a book can be searched using ID, title, author or any of the field.
4. You can add the student login section.

TEXT BOOKS

1. C Programming and Data Structures, P.Padmanabham, Third Edition, BS Publications
2. Computer programming in C.V.RAjaraman, PHI Publishers.
3. C Programming, E.Balagurusamy, 3rd edition, TMHPublishers.
4. C Programming, M.V.S.S.N Venkateswarlu and E.V.Prasad,S.Chand Publishers
5. Mastering C,K.R.Venugopal and S.R.Prasad, TMH Publishers.

Program Outcomes:

1. Ability to apply solving and logical skills to programming in C language.
2. Able to apply various conditional expressions and looping statements to solve problems associated with conditions.
3. Acquire knowledge about role of Functions involving the idea of modularity.
4. Understand and apply the Concept of Array, Strings and pointers dealing with memory management.
5. Acquire knowledge about basic data structures and their implementation.

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

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

1/-/-/1

(R20A0014) FINANCIAL INSTITUTIONS, MARKETS AND SERVICES

COURSE OBJECTIVES:

1. To expose students towards a clear understanding of Financial Markets in India, their operations and relevant development.
2. To lay foundation and equip them with the knowledge of Financial Services, related institutions and their functions.
3. To provide awareness of operations of Financial Markets, Regulators and Shareholders
4. To Provide knowledge in Innovations and technologies of Financial Instruments and Financial Services.
5. To allow them to understand Banking and Non-Banking Institutions operations and their services.

UNIT-I: INTRODUCTION

Financial System and Economic Development - Indicators of Financial Development - Concepts related to Financial Markets, Institutions and Services

Regulatory and Promotional Institutions: Functions and Roles of RBI, IRDA, SEBI.

UNIT II: COMMERCIAL BANKS

Functions of Commercial Banks. Performance and Competition of Public and Private Sector banks- NPA's Non-Banking Financial Institutions- Structure and Functions LIC - GIC & Mutual Funds.

UNIT-III: FINANCIAL AND SECURITIES MARKETS

Structure and Functions of Call Money Market. Government Securities Market: T-bills Market - Commercial Bills Market. Securities Market: Organization and Structure - Listing - Trading and Settlement.

UNIT-IV: ASSET/FUND BASED FINANCIAL SERVICES

Lease Finance - Hire Purchase Finance- Bills Discounting - Housing Finance - Venture Capital Financing. Fee-based Advisory Services: Stock Broking - Credit Rating Agencies.

UNIT-V: INVESTMENT BANKING

Introduction, Functions and activities, underwriting, bankers to an issue, debenture trustees, portfolio managers.

REFERENCE BOOKS:

1. L. M. Bhole, Financial Institutions and Markets, TMH.
2. M. Y. Khan, Financial Services, TMH.
3. Vasant Desai: Financial Markets and Financial Services, Himalaya.
4. Justin Paul and Padmalatha Suresh: Management of Banking and Financial Services, Pearson.
5. Gomez, Financial Markets, Institutions and Financial Services, PHI.

COURSE OUTCOMES

1. The students will get enormous knowledge on Financial Institutions, Securities Markets, and Financial Services.
2. It allows clear understandings of Banking and Non-Banking Financial Institutions operations.
3. Adequate knowledge to indulgence in Investments of financial products and services.
4. Comprehend various policy reforms that impact Financial Markets and Investments.
5. Availability of various fund based and Fee based financial services to get more exposure.

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

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

2/-/-/2

(R20A0002) 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 interview skills.
3. To lay foundation with writing strategies for the future workplace needs.
4. To acquaint students with different components of professional presentation skills.
5. To equip students with necessary training in listening to comprehend dialects of English language.

UNIT-I

Listening - Listening for General Details.
Speaking - Description of Pictures, Places, Objects and Persons

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

Extract - The summary of Asimov's *Nightfall*
Grammar - If clauses
Vocabulary - Technical Vocabulary
Writing - Paragraph Writing

Unit –II

Listening - Listening for Specific Details
Speaking - Oral presentations

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

Extract - A literary analysis of Asimov's *Nightfall*
Grammar - Transformation of Sentences
Vocabulary - Idioms
Writing - Abstract Writing

Unit –III

Listening - Listening for Gist
Speaking - Mock Interviews

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

Extract - Character sketches of Asimov's *Nightfall's* - protagonists and
antagonists - Dr. Susan Calvin, Mike Donovan, Stephen Byerley, Francis Quinn
Grammar - Transitive and Intransitive Verbs
Vocabulary - Standard Abbreviations (Mini Project)
Writing - Job Application – Cover letter

Unit – IV

Listening - Listening for Vocabulary
Speaking - Telephonic Expressions

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

Extract - Theme of Asimov's *Nightfall*
Grammar - Auxiliary verbs, Degrees of Comparison
Vocabulary - Word Analogy
Writing - Job Application - Resume

Unit – V

Listening - Critical Listening (for attitude and Opinion)
Speaking - Group discussion

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

Extract - Asimov's *Nightfall*: A Science Fiction
Grammar - Common Errors, Prepositions
Vocabulary - Homonyms, homophones and homographs
Writing - Report Writing

* Isaac Asimov's *Nightfall* for intensive and extensive reading
* Exercises apart from the text book shall also be referred for classroom tasks.

REFERENCE BOOKS:

1. Nightfall, Isaac Asimov; Robert Silverberg, 1990
2. Practical English Usage. Michael Swan. OUP. 1995.
3. Remedial English Grammar. F.T. Wood. Macmillan.2007
4. On Writing Well. William Zinsser. Harper Resource Book. 2001
5. Study Writing. Liz Hamp-Lyons and Ben Heasly. Cambridge University Press. 2006.
6. Communication Skills. Sanjay Kumar and Pushpa Lata. Oxford University Press. 2011.
7. Exercises in Spoken English. Parts. I-III. CIEFL, Hyderabad. Oxford University Press

COURSE OUTCOMES:

Students will be able to:

1. Analyze and interpret a diverse range of engineering concepts through the synthesis of information
2. Understand the impact of professional engineering solutions is societal contexts and demonstrate its knowledge
3. Achieve communicative ability in their personal and professional relations with clarity of speech and creativity in content
4. Function effectively as an individual and a team; and would be able to prepare themselves to be market ready
5. Comprehend and write effective reports and design documentation, manage projects and make effective presentations.

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

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

3/1/-/4

(R20A0022) MATHEMATICS-II

COURSE OBJECTIVES:

1. 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.
2. 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.
3. 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.
4. Evaluation of multiple integrals.
5. 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: Solutions of algebraic, transcendental equations and Interpolation

Solution of algebraic and transcendental equations: Introduction, Bisection Method, Method of false position, Newton-Raphson method and their graphical interpretations.

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.

UNIT – II: Numerical Methods

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

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

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).

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:

1. Higher Engineering Mathematics by B V Ramana ., Tata McGraw Hill.
2. Higher Engineering Mathematics by B.S. Grewal, Khanna Publishers.
3. Mathematical Methods by S.R.K Iyenger, R.K.Jain, Narosa Publishers.

REFERENCE BOOKS:

1. Elementary Numerical Analysis by Atkinson-Han, Wiley Student Edition.
2. Advanced Engineering Mathematics by Michael Greenberg –Pearson publishers.
3. Introductory Methods of Numerical Analysis by S.S. Sastry, PHI

COURSE OUTCOMES:

After learning the concepts of this paper the student will be able to independently

1. Find the roots of algebraic, non algebraic equations and predict the value at an intermediate point from a given discrete data.
2. 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.
3. Solve first order linear and non-linear partial differential equations which are very important in engineering field.
4. Evaluate multiple integrals; hence this concept can be used to evaluate Volumes and Areas of an object.
5. Evaluate the line, surface, volume integrals and converting them from one to another using vector integral theorems.

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

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

3/-/-/3

(R20A0261) BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

COURSE OBJECTIVES:

1. To emphasize on the basic elements in electrical circuits.
2. To analyze DC Circuits and Single-Phase AC Circuits.
3. To illustrate various Electrical machines.
4. To understand various diodes and rectifiers.
5. To give an elementary treatment of Bipolar Junction Transistor.

UNIT –I:

Introduction to Electrical Circuits: Concept of Circuit and Network, Types of elements, R-L-C Parameters, Independent and Dependent sources, Source transformation and Kirchhoff's Laws. (Simple Problems).

UNIT –II:

Network Analysis: Network Reduction Techniques- Series and parallel connections of resistive networks, Star–to-Delta and Delta-to-Star Transformations for Resistive Networks and mesh analysis.

Network Theorems: Thevenin's Theorem, Norton's Theorem and Superposition Theorem.

UNIT-III:

Electrical Machines (elementary treatment only):

DC. Generator: principle of operation, constructional features, EMF equation. DC Motor: principle of operation, Back EMF, torque equation.

Single phase transformer: principle of operation, constructional features and EMF equation.

UNIT –IV:

Diodes: P-n junction diode, symbol, V-I Characteristics, Diode applications, Zener Diode: characteristics, Rectifiers – Half wave, Full wave and Bridge rectifiers (simple Problems).

UNIT –V:

Bipolar Junction Transistor (BJT): Construction, Principle of Operation, Amplifying Action, Common Emitter, Common Base and Common Collector configurations. (elementary treatment only).

TEXT BOOKS:

1. Basic Electrical and electronics Engineering –M S Sukija TK Nagasarkar Oxford University.
2. Basic Electrical and electronics Engineering-D P Kothari. I J Nagarath Tata McGraw Hill Education.
3. Electric Circuits - A. Chakrabarhty, Dhanipat Rai & Sons.

REFERENCE BOOKS:

1. Electronic Devices and Circuits – R.L. Boylestad and Louis Nashelsky, PEI/PHI, 9th Ed, 2006.
2. Millman's Electronic Devices and Circuits – J. Millman and C. C. Halkias, Satyabratajit, TMH, 2/e, 1998. 3. Engineering circuit analysis- by William Hayt and Jack E. Kemmerly, McGraw Hill Company, 6th edition.
3. Linear circuit analysis (time domain phasor and Laplace transform approaches)- 2nd edition by Raymond A. DeCarlo and Pen-Min-Lin, Oxford University Press-2004.
4. Network Theory by N. C. Jagan& C. Lakshminarayana, B.S. Publications.
5. Network Theory by Sudhakar, Shyam Mohan Palli, TMH.

COURSE OUTCOMES:

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

1. To analyze basic concepts of electrical circuits and networks.
2. To analyze and solve electrical circuits using network laws and theorems.
3. To understand the Constructional Details and Principle of Operation of DC Machines and Transformers.
4. To identify and characterize diodes and various types of transistors.
5. To Design and analyze the DC bias circuitry of BJT.

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

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

2/-/2/3

(R20A0301) ENGINEERING GRAPHICS

COURSE OBJECTIVES:

1. To learn basic engineering graphic communication skills and concept from the given data.
2. To learn the 2D principles of orthographic projections
3. To know the 3D principles of isometric projections
4. To learn basic computer aided design skills using AutoCAD.
5. To know the conversion of orthographic views to isometric Views and vice versa

UNIT – I

Introduction to Engineering Graphics

Principles of Engineering Drawing/Graphics- various drawing instruments- convention in drawing- dimensioning- learning practice- BIS conventions.

Geometrical constructions

a) Polygons- construction of regular polygons (General Method)

Curves Used In Engineering Practice

b) Conic Sections (General Method - Eccentricity)
c) Cycloid, Epicycloid and Hypocycloid
d) Scales- Plain, Diagonal, and Vernier

UNIT – II

2D PROJECTIONS

Orthographic Projections: – Conventions – First angle, principles of orthographic projections

Projections of Points- in all four quadrants

Projections of Lines- parallel and inclined to both the reference planes

UNIT – III

Projections of Planes: Projection of regular planes, and plane inclined to both the reference planes

Projections of Solids: Projections of regular solids prism and pyramid inclined to both the reference planes.

UNIT – IV

3D Projections

Isometric Projections: Principles of Isometric Projection – Isometric Scale – Isometric Views, -conventions- planes, solids and compound solids

Isometric Projections: Principles of Isometric Projection – Isometric Scale – Isometric Views– Conventions –Plane Figures, Simple and Compound Solids.

UNIT – V

Transformation of Projections: Conversions of Isometric view to orthographic view and vice versa

Demonstration: Basic principles of AutoCAD

TEXT BOOKS:

1. Engineering Drawing, Special Edition-MRCET, McGrahill Publishers, 2017.
2. Engineering Drawing, N.D. Bhatt
3. Engineering Drawing by K.Venu Gopal& V.Prabu Raja New Age Publications.

REFERENCE BOOKS:

1. Engineering drawing – P.J. Shah. S.Chand Publishers.
2. Engineering Drawing- Johle/Tata Macgraw Hill Book Publishers.

COURSE OUTCOMES:

1. The student will be capable to produce geometric construction, dimensioning and curves and detail drawings.
2. Compile projections of points, lines, planes and solids will improvise the student visualization skills.
3. A complete understanding on both orthographic and isometric projection is attained by the student.
4. Understand and visualize the 3D view of engineering objects, elaborate the conversions of 2D to 3D and vice versa.
5. The students will be familiarizing with basic computer aided design skills in graphical communication.

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

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

3/-/-/3

(R20A0502) PYTHON PROGRAMMING

COURSE OBJECTIVES:

1. To read and write simple Python programs.
2. To develop Python programs with conditionals and loops.
3. To define Python functions and call them.
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 and installation, overview on python interpreters, working with python, Numeric Data Types: int, float, Boolean, complex and string and its operations, Standard Data Types: List, tuples, set and Dictionaries, Data Type conversions, commenting in python.

UNIT II

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

UNIT III

CONTROL FLOW AND LOOPS

Conditional (if), alternative (if-else), chained conditional (if- elif -else), Loops: For loop using ranges, string, Use of while loops in python, Loop manipulation using pass, continue and break

UNIT IV

Functions

Defining Your Own Functions, Calling Functions, passing parameters and arguments, Python Function arguments: Keyword Arguments, Default Arguments, Variable-length arguments, Anonymous Functions, Fruitful Functions (Function Returning Values), Scope of the Variables in a Function - Global and Local Variables. Powerful Lambda functions in python.

UNIT V

I/O and Error Handling in Python

Introduction, Access Modes, Writing Data to a File, Reading Data from a File, Additional File Methods introduction to Errors and Exceptions, Handling IO Exceptions, Run Time Errors, Handling Multiple Exceptions.

Introduction to Data Structures: What are Data structures, Types of Data structures, Introduction to Stacks and Queues.

TEXT BOOKS:

1. R. Nageswara Rao, “Core Python Programming”, dream tech
2. Allen B. Downey, ``Think Python: How to Think Like a Computer Scientist‘‘, 2nd edition, Updated for Python 3, Shroff/O‘Reilly Publishers, 2016.
3. Python Programming: A Modern Approach, Vamsi Kurama, Pearson
4. Data Structures and Algorithmic Thinking with Python by Narasimha Karumanchi

REFERENCE BOOKS:

1. Core Python Programming, W.Chun, Pearson.
2. Introduction to Python, Kenneth A. Lambert, Cengage
3. Learning Python, Mark Lutz, Orielly

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

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

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

-/-/2/1

(R20A0081) ENGLISH LANGUAGE 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.

COURSE 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 Communication Skills Lab has 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 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: Describing Objects/ Situations/ People

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 Lab for 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)Hard Disk –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.

COURSE OUTCOMES:

After completion of the course the students will be able to:

1. Learn with precision through computer-assisted individualized and independent language learning to work independently in an engineering set-up.
2. Improve conversational reception and articulation techniques in the course of repetitive instruction thereby gaining confidence both in institutional and professional environment.
3. Acquire 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. Imbibe appropriate use of language in situations where one works as an individual and as a leader/team player.
5. Display professional behaviors and body language.

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

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

-/-/3/1.5

(R20A0289) BASIC ELECTRICAL AND ELECTRONICS ENGINEERING LAB

COURSE OBJECTIVES:

1. To design electrical systems.
2. To analyze a given network by applying various network theorems.
3. To expose the students to the operation of dc generator.
4. To expose the students to the operation of dc motor and transformer.
5. To get the knowledge using electrical measuring devices.

CYCLE – 1

1. Verification of KVL and KCL.
2. Verification of Thevenin's theorem.
3. Verification of Norton's theorem.
4. Verification of Superposition theorem.
5. Swinburne's test on DC shunt machine.
6. OC & SC tests on single phase transformer.

CYCLE – 2

1. PN Junction diode characteristics.
2. Zener diode characteristics.
3. Half wave rectifier with and without filter.
4. Full wave rectifier with and without filter.
5. Transistor CB Characteristics (Input and Output)
6. Transistor CE Characteristics (Input and Output)

NOTE: Any 10 of Above Experiments Are to Be Conducted

COURSE OUTCOME:

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 and transistors.
5. Determine the working of rectifiers in detail.

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

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

-/-/3/1.5

(R20A0582) PYTHON PROGRAMMING LAB

COURSE OBJECTIVES:

1. To know the Syntax and Semantics in Python.
2. To understand the different data types Lists, Dictionaries in Python.
3. To know how to execute the programs using loops and control statements
4. How to make decision and to create functions in Python
5. To handle files and exception Handling in Python

Week 1:

A) Write python program to print Hello World
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 iems
B) Write a python program using the following methods: 1) count 2) 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) Write a Python function that takes two lists and returns True if they are equal otherwise false
B) Write python program in which an function is defined and calling that function prints Hello World
C) Write python program in which an function(with single string parameter) is defined and calling that function prints the string parameters given to function.
D) Write a python program using with any one of python function argument?

Week 10:

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()?

Week 11:

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 12:

A) Write a program to implement stack using array.
B) Write a program to implement Queue using array.

TEXT BOOKS:

1. R. Nageswara Rao, "Core Python Programming", dream tech
2. Allen B. Downey , " Think Python: How to Think Like a Computer Scientist", Second Edition,
   Updated for Python 3, 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 and Functions
5. Understand and summarize different File handling operations and exceptions

MALLA REDDY COLLEGE OF ENGINEERING AND TECHNOLOGY

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

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(R20A0003) 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 human beings.
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 natural way.
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 with Nature.

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 Prosperity
A 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 and enjoyer).
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 in relationship.
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 (Sarvabhaum Vyawastha) - from family to world family!

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 production systems.
c. Ability to identify and develop appropriate technologies and management patterns for above production systems.

TEXT BOOKS:

1. R. R. Gaur, R Sangal, G P Bagaria, 2009, A Foundation Course in Human Values and Professional Ethics.
2. Prof. K. V. Subba Raju, 2013, Success Secrets for Engineering Students, Smart Student Publications, 3rd Edition.

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, Commonwealth Publishers.
6. A. N. Tripathy, 2003, Human Values, New Age International Publishers.
7. Subhas Palekar, 2000, How to practice Natural Farming, Pracheen(Vaidik) Krishi Tantra Shodh, Amravati.

8. Donella H. Meadows, Dennis L. Meadows, Jorgen Randers, William W. Behrens III, 1972, Limits to Growth - Club of Rome's report, Universe Books.
9. E G Seebauer & Robert L.Berry, 2000, Fundamentals of Ethics for Scientists & Engineers, Oxford University Press.
10. M Govindrajan, S Natrajan & V. S Senthil kumar, Engineering Ethics (including Humna Values), Eastern Economy Edition, Prentice Hall of India Ltd.

Relevant CDs, Movies, Documentaries & Other Literature:

1. Value Education website, http://www.uptu.ac.in
2. Story of Stuff, http://www.storyofstuff.com
3. Al Gore, An Inconvenient Truth, Paramount Classics, USA
4. Charle Chaplin, Modern Times, United Artists, USA
5. IIT Delhi, Modern Technology - the Untold Story

COURSE OUTCOMES:

1. The students will be able to obtain happiness and prosperity in their life.
2. They will develop harmony at all levels.
3. They can have satisfying human behavior throughout their life