B.Tech. I Year COURSE STRUCTURE (SR24 Regulations)

B.Tech. in COMPUTER SCIENCE AND ENGINEERING and
B.Tech. in COMPUTER SCIENCE AND ENGINEERING (DATA SCIENCE)
Applicable from the Academic Year 2024-25

First Year First Semester (I/I)

S. No.	Course Code	Course	L	T	P	C
1	S24MA101BS	Matrices and Calculus	3	1	0	4
2	S24CH102BS	Engineering Chemistry	3	1	0	4
3	S24CS103ES	Programming for Problem Solving	3	0	0	3
4	S24EE104ES	Basic Electrical Engineering	2	0	0	2
5	S24ME105ES	Computer Aided Engineering Graphics	0	1	2	2
6	S24CS106ES	Elements of Computer Science & Engineering	0	0	2	1
7	S24CH107BS	Engineering Chemistry Laboratory	0	0	2	1
8	S24CS108ES	Programming for Problem Solving Laboratory	0	0	2	1
9	S24EE109ES	Basic Electrical Engineering Laboratory	0	0	2	1
10	S24ME110ES	Design Thinking	0	0	2	1
		Induction Program				
		Total	11	3	12	20

First Year Second semester (I/II)

S. No.	Course Code	Course	L	T	P	C
1	S24MA201BS	Ordinary Differential Equations and Vector Calculus	3	1	0	4
2	S24PH202BS	Applied Physics	3	1	0	4
3	S24ME203ES	Engineering Workshop	0	1	3	2.5
4	S24EN204HS	English for Skill Enhancement	2	0	0	2
5	S24EC205ES	Electronic Device and Circuits	2	0	0	2
6	S24CS206ES	Python Programming Laboratory	0	1	2	2
7	S24PH207BS	Applied Physics Laboratory	0	0	3	1.5
8	S24EN208HS	English Language and Communication Skills Laboratory	0	0	2	1
9	S24CS209ES	IT Workshop	0	0	2	1
10	*S24MC210	Universal Human Values	3	0	0	0
		Total	13	4	12	20

Matrices And Calculus
(S24MA101BS)

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

                                                                   3 1   0 4

Course Objectives:

 To learn
1. Types of matrices, concept of rank of a matrix and apply this to solve the system of linear equations.
2. Concept of eigen values and eigen vectors and to reduce the quadratic form to canonical form.
3. Geometrical interpretations of mean value theorems and their application to the mathematical problems.
4. Evaluation of improper integrals using Beta and Gamma functions.
5. Partial differentiation and its application in finding maxima and minima of function of two and three variables.
6. Concepts of double and triple integrations and their applications.

Course Outcomes:

 After learning the content of this course, the students will able to

1. Write the matrix representation of system of linear equations and analyse the solution of it.

2. Find the eigen values and corresponding eigen vectors also obtain the canonical form of

 any quadratic form by using linear and orthogonal transformation.

3. Evaluate improper integrals using Beta-Gamma functions, verify mean value theorems for

 given functions.

4. Find the extreme values of functions of two & three variables with or without constraint.

5. Evaluate multiple integrals and apply it to find areas and volumes.

UNIT - I: Matrices   **10L**
Rank of a matrix by Echelon form and Normal form, Inverse of Non-singular matrices by Gauss-Jordan method, System of linear equations: Solving system of Homogeneous and Non-Homogeneous equations by Gauss elimination method, Gauss Seidel Iteration Method

UNIT - II: Eigen values and Eigen vectors   **10L**
Linear Transformation and Orthogonal Transformation: Eigenvalues, Eigenvectors 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: Calculus   10L

Mean value theorems: Rolle's theorem, Lagrange's Mean value theorem with their Geometrical Interpretation and applications, Cauchy's Mean value Theorem, Taylor's Series. Definition of Improper Integral: Beta and Gamma functions and their applications.

UNIT - IV: Multivariable Calculus (Partial Differentiation and applications)   10L

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

UNIT- V: Multivariable Calculus (Integration)   8L

Evaluation of Double Integrals (Cartesian and polar coordinates), change of order of integration (only Cartesian form), Evaluation of Triple Integrals, Change of variables (Cartesian to polar) for double

Applications: Areas and volumes by double integrals.

Text Books:
1. B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010
2. R.K. Jain and S.R.K. Iyengar, Advanced Engineering Mathematics, Narosa Publications, 5th Edition,2016.

Reference Books:
1. Erwin kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley & Sons, 2006.
2. G.B. Thomas and R.L. Finney, Calculus and Analytic geometry, 9thEdition,Pearson, Reprint, 2002.
3. N.P. Bali and Manish Goyal, A text book of Engineering Mathematics, Laxmi Publications, Reprint, 2008.
4. H. K. Dass and Er. Rajnish Verma, Higher Engineering Mathematics, S Chand and Company Limited, New Delhi.

ENGINEERING CHEMISTRY

(S24CH102BS)

B.Tech. I Year I Sem.	L	T	P	C
	3	1	0	4

Course Objectives:

1. To bring adaptability to new developments in Engineering Chemistry and to acquire the skills required to become a perfect engineer.
2. To include the importance of water in industrial usage, fundamental aspects of battery chemistry, significance of corrosion it's control to protect the structures.
3. To imbibe the basic concepts of petroleum and its products.
4. To acquire required knowledge about engineering materials like cement, smart materials and Lubricants.

Course Outcomes: After learning the content of this course

1. The students are able to understand the basic properties of water and its usage in domestic and industrial purposes.
2. Students will acquire the basic knowledge of electrochemical procedures related to corrosion and its control.
3. They can learn the fundamentals and general properties of polymers and other engineering materials.
4. Gain knowledge about different types of fuels, combustion and refining of petroleum.
5. Student will describe the different types of smart materials, cements, and Lubricants and their engineering applications.

UNIT - I: Water and its treatment

Introduction to hardness of water – Estimation of hardness of water by complexometric method and related numerical problems. Potable water and its specifications - Steps involved in the treatment of potable water - Disinfection of potable water by chlorination and break - point chlorination.
Defluoridation- Determination of F^- ion by ion- selective electrode method.

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

UNIT – II Battery Chemistry & Corrosion
Introduction - Classification of batteries- primary, secondary and reserve batteries with examples. Basic requirements for commercial batteries. Construction, working and applications of Lithium-ion battery. Applications of Li-ion battery to electric vehicles. **Fuel Cells**- Differences between battery and fuel cell, Construction and applications of Methanol-Oxygen fuel cell[MOFC] and solid-oxide fuel cell [SOFC].

Solar cells: Construction, working and applications of solar cell

Corrosion: Causes and effects of corrosion – theories of chemical and electrochemical corrosion – mechanism of electrochemical corrosion, Types of corrosion: Galvanic, water-line and pitting corrosion. Factors affecting rate of corrosion, Corrosion control methods- Cathodic protection – Sacrificial anode and impressed current methods.

UNIT - III: Polymeric materials
Definition – Classification of polymers with examples – Types of polymerization –addition (free radical addition) and condensation polymerization with examples – Nylon 6:6, Terylene

Plastics: Definition and characteristics- thermoplastic and thermosetting plastics, Preparation, Properties and engineering applications of PVC, Bakelite, Teflon.

Rubbers: Natural rubber and its vulcanization.

Elastomers: Characteristics –preparation – properties and applications of Buna-S, Butyl and Thiokol rubber.

Conducting polymers: Classification with examples-mechanism of conduction in trans-polyacetylene and applications of conducting polymers.

Biodegradable polymers: Concept and advantages - Polylactic acid and poly vinyl alcohol and their applications.

UNIT - IV: Energy Sources
Thermal energy: Introduction, Calorific value of fuel – HCV, LCV- Dulongs formula. Classification- **solid fuels**: coal – analysis of coal – proximate and ultimate analysis and their significance. **Liquid fuels** – petroleum and its refining, cracking types – moving bed catalytic cracking. Knocking – octane and cetane rating, synthetic petrol - Fischer-Tropsch's process; **Gaseous fuels** – composition and uses of natural gas, LPG and CNG.

UNIT - V: Engineering Materials:
Cement: Portland cement, its composition, setting and hardening.

Smart materials and their engineering applications
Shape memory materials- Poly L- Lactic acid. Thermoresponse materials- Polyacryl amides, Poly vinyl amides

Piezoelectric materials-classification with examples, properties and applications.

Lubricants: Classification of lubricants with examples-characteristics of a good lubricant -- properties of lubricants: viscosity, cloud point, pour point, flash point and fire point.

TEXT BOOKS:

1. Engineering Chemistry by P.C. Jain and M. Jain, Dhanpatrai Publishing Company, 2010
2. Engineering Chemistry by Rama Devi, Venkata Ramana Reddy and Rath, Cengage learning, 2016

REFERENCE BOOKS:

1. Engineering Chemistry by Shikha Agarwal, Cambridge University Press, Delhi (2015)
2. Engineering Chemistry by Shashi Chawla, Dhanpatrai and Company (P) Ltd. Delhi (2011

NPTEL Cources

https://nptel.ac.in/courses/122101001

https://nptel.ac.in/courses/104103069

https://nptel.ac.in/courses/104103071

https://nptel.ac.in/courses/104106137

Animated videos.

https://www.youtube.com/watch?v=Pu7g3uIG6Zo

https://www.youtube.com/watch?v=qpFC_Ecu_yQ

https://www.youtube.com/watch?v=EkjjeS2TATg

https://www.youtube.com/watch?v=4RDA_B_dRQ0

https://www.youtube.com/watch?v=cZg4bfEnLcU

https://www.youtube.com/watch?v=4vGjHU2YsYM

https://www.youtube.com/watch?v=Tn6xKhQ61Vs

SPHOORTHY ENGINEERING COLLEGE
(AUTONOMOUS)
Passion Ignited @ Sphoorthy

Programming for Problem Solving

(S24 CS103ES)

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

Course Objectives:
1. To learn the fundamentals of computers.
2. To understand the various steps in program development.
3. To learn the syntax and semantics of the C programming language.
4. To learn the usage of structured programming approaches involving problems.

Course Outcomes:

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

1. To write algorithms and to draw flow charts for solving problems and convert them into programs.
2. To code and test, a given logic in the C programming language using different programming constructs.
3. To decompose a problem in to functions and to develop modular Reusable code.
4. To use arrays, pointers, strings and structures to write C programs.
5. To solve Searching and sorting problems

UNIT-I: Introduction to Programming

Compilers, compiling and executing a program.

Representation of Algorithm - Algorithms for finding roots of a quadratic equations, finding minimum and maxminum of a given set, finding if a number is prime number Flowchart /Pseudo code with examples, Program design and structured programming

Introduction to C Programming Language: variables (with data types and space requirements), Syntax and Logical Errors in compilation, object and executable code, Operators, expressions and precedence, Expression evaluation, Storage classes (auto, extern, static and register), type conversion, The main method and command line arguments Bitwise operations: Bitwise AND, OR, XOR and NOT operators

Conditional Branching and Loops: Writing and evaluation of conditionals and consequent branching with if, if-else, switch-case, ternary operator, go to, Iteration with for, while, do-while loops

I/O: Simple input and output with scanf and printf, formatted I/O, Introduction to stdin, stdout and stderr. Command line arguments

UNIT-II: Arrays, Strings, Structures and Pointers:

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

Strings: Introduction to strings, handling strings as array of characters, basic string functions available in C (strlen, strcat, strcpy, strstr etc.), arrays of strings

Structures: Defining structures, initializing structures, unions, Array of structures

Pointers: Idea of pointers, Defining pointers, Pointers to Arrays and Structures, Use of Pointers in self-referential structures, usage of self-referential structures in linked list (no implementation) Enumeration data type.

UNIT-III: Preprocessor and File handling in C:

Preprocessor: Commonly used Preprocessor commands like include, define, undef, if, ifdef, ifdef

Files: Text and Binary files, Creating and Reading and writing text and binary files, Appending data to existing files, Writing and reading structures using binary files, Random access using fseek, ftell and rewind functions.

UNIT-IV: Function and Dynamic Memory Allocation:

Functions: Designing structured programs, Declaring a function, Signature of a function, Parameters and return type of a function, passing parameters to functions, call by value, Passing arrays to functions, passing pointers to functions, idea of call by reference, Some C standard functions and libraries

Recursion: Simple programs, such as Finding Factorial, Fibonacci series etc., Limitations of Recursive functions. Dynamic memory allocation: Allocating and freeing memory, Allocating memory for arrays of different data types

UNIT-V: Searching and Sorting:

Basic searching in an array of elements (linear and binary search techniques), Basic algorithms to sort array of elements (Bubble, Insertion and Selection sort algorithms), Basic concept of order of complexity through the example programs

Text Books:
1. 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, (3rd Edition)

Reference Books:
1. Brian W. Kernighan and Dennis M .Ritchie, The C Programming Language, Prentice Hall of India
2. E. Balaguruswamy, Computer fundamentals and C, 2nd Edition, McGraw-Hill
3. YashavantKanetkar, Let Us C, 18th Edition, BPB
4. R.G. Dromey, How to solve it by Computer, Pearson (16th Impression)
5. Programming in C, Stephen G. Kochan, Fourth Edition, Pearson Education.
6. Herbert Schildt, C : The Complete Reference, Mc Graw Hill, 4th Edition
7. Byron Gottfried, Schaum's Outline of Programming with C, Mc Graw-Hill

BASIC ELECTRICAL ENGINEERING

(S24EE104ES)

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

                                                                2   1   0   2

Course Objectives:

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

Course Outcomes:

- To analyze and solve electrical circuits using network laws and theorems.
- To understand and analyze basic Electric and Magnetic circuits
- To study the working principles of Electrical Machines
- To introduce components of Low Voltage Electrical Installations

UNIT-I: D.C. Circuits

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

UNIT-II: A.C. Circuits

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

UNIT-III: Transformers

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

UNIT-IV: Electrical Machines

Generation of rotating magnetic fields, Construction and working of a three-phase induction motor, Significance of torque-slip characteristic. Loss components and efficiency, starting and speed control of induction motor. Single-phase induction motor. Construction, working, torque-speed characteristic and speed control of Shunt dc motor.
Construction and working of synchronous generators.

UNIT-V: Electrical Installations

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

Suggested Text-Books/Reference-Books:

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

Computer Aided engineering Graphics
(S24ME105ES**)**

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

COURSE OBJECTIVES:

1.. To acquire visualization computer drafting skill for ideas in design of engg products.
2. To apply drafting techniques using Auto Cad.
3. To explain principles of conventions in Engg. Drawing & to make use of the instruments in
    real-time industry.
4. To prepare the student to draw pictorial views of solids.
5. To enable the student for creation of 2D & 3D CAD Modeling of objects.
6. To acquire the knowledge to plot conversion of isometric views to orthographic view and
vice versa.

COURSE OUTCOMES:

1. Sketch free hand sketches for all constructions with imaginary and creativity by
   applying Auto CAD.
2. Construct different curves and scales & to communicate the ideas and information.
3. Draw the projections of objects like straight   lines, planes   and solids to interpret
   engineering drawings.
4. Design & prepare working drawings and estimate lateral surface of sheet to make
   solids.
5. Produce the conversion of the orthographic views in to isometric views and vice
   versa.

UNIT – I: Introduction to Engineering Graphics: Principles of Engineering Graphics and their
Significance, Scales – Plain & Diagonal, Conic Sections including the Rectangular
Hyperbola – General method only. Cycloid, Epicycloid and Hypocycloid, Introduction to
Computer aided drafting – views, commands and conics

UNIT- II: Orthographic Projections: Principles of Orthographic Projections – Conventions –
Projections of Points and Lines, Projections of Plane regular geometric figures. Auxiliary
Planes. Computer aided orthographic projections – points, lines and planes

UNIT – III: Projections of Regular Solids – Auxiliary Views - Sections or Sectional views of Right Regular Solids – Prism, Cylinder, Pyramid, Cone – Auxiliary views, Computer aided projections of solids – sectional views

UNIT – IV: Development of Surfaces of Right Regular Solids – Prism, Cylinder, Pyramid and Cone, Development of surfaces using computer aided drafting

UNIT – V: Isometric Projections: Principles of Isometric Projection – Isometric Scale – Isometric Views – Conventions – Isometric Views of Lines, Plane Figures, Simple and Compound Solids – Isometric Projection of objects having non- isometric lines. Isometric Projection of Spherical Parts. Conversion of Isometric Views to Orthographic Views and Vice-versa –Conventions. Conversion of orthographic projection into isometric view using computer aided drafting.

Note: - Explanation, Practice, Internal & External evaluation both are to be conducted using Computer aided drafting.

Text Books:

1. Basant Agrawal and C M Agrawal, Engineering Drawing, Third Edition, McGraw Hill

2. N.D. Bhatt /Charotar , Engineering Graphics,15th Edition, McGraw Hill, 2015

3. T. Jeyapoovan, Vikas: S. Chand and company Ltd ,Engineering Drawing and graphics Using   Auto CAD ,Third Edition,2022

References:

1. WILEY, Engineering Graphics and Design, Edition 2020
2. M. B. Shah, B.C. Rane / Pearson, Engineering graphics
3. N. S. Parthasarathy and Vela Murali , Engineering Drawing, Oxford
4. PK Balaveera Reddy et al – Computer Aided Engineering Drawing ,CBS Publishers

ELEMENTS OF COMPUTER SCIENCE AND ENGINEERING

(S24CS106ES)

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

                                                                0   0   2   1

Course Objective: To provide an overview of the subjects of computer science and engineering.

Course Outcomes:

1. Know the working principles of functional units of a basic Computer
2. Understand the role of computational thinking and learn to break down complex problems to create step-by-step solutions.
3. Build interactive projects using Scratch's user-friendly coding blocks.
4. Understand program development, the use of data structures and algorithms in problemsolving.
5. Know the need and types of operating system, database systems.
6. Understand Autonomous systems, the application of artificial intelligence.

UNIT – I

Basics of a Computer – Hardware, Software, Generations of computers. Hardware - functional units, Components of CPU, Memory – hierarchy, types of memory, Input and output devices. Software – systems software, application software, packages, frameworks, IDEs.

UNIT – II

Computational Thinking – Introduction to Computational Thinking, Components of Computational

Thinking, Case Study. Applications of computational thinking.

Scratch Programming – Introduction to Block based programming using Scratch, components

of scratch, developing project using scratch,

case study: deployment of project in scratch portal.

UNIT – III

Software development – waterfall model, Agile, Types of computer languages – Programming, markup, scripting Program Development – steps in program development, datastructures – definition, types of data structures

UNIT – IV

Operating systems: Functions of operating systems, types of operating systems, Device & Resourcemanagement

Database Management Systems: Data models, RDBMS, SQL, Database Transactions, data centers,cloud services

UNIT – V
Autonomous Systems: IoT, Robotics, Drones, Artificial Intelligence – Learning,
Game Development,natural language processing, image and video processing.
Cloud Basics

TEXT BOOK:
1. Invitation to Computer Science, G. Michael Schneider, Macalester College,
    Judith L. GerstingUniversity of Hawaii, Hilo, Contributing author: Keith
    Miller University of Illinois, Springfield.
2. "**Scratch Programming in Easy Steps"** by Sean McManus, In Easy Steps.

REFERENCE BOOKS:
1. Fundamentals of Computers, Reema Thareja, Oxford Higher Education, Oxford
    University Press.
2. Introduction to computers, Peter Norton, 8th Edition, Tata McGraw Hill.
3. Computer Fundamentals, Anita Goel, Pearson Education India, 2010.
4. Elements of computer science, Cengage.
5. **"Computational Thinking for the Modern Problem Solver"** by David D. Riley and
    Kennedy M. H., CRC Press.

ENGINEERING CHEMISTRY LABORATORY

(S24CH107BS)

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

Course Objectives:

The course consists of experiments related to the principles   of chemistry required for engineering student.

- Students will learn Estimation of hardness of water to check its suitability for drinking purpose.
- Students are able to perform estimation of acid using bases by conductometry and pH-metry methods and Fe(II) using std. KMnO4 by potentiometric method.
- Students will learn to prepare polymers such as Bakelite and Thiokol rubber in the laboratory.
- Students will learn skills related to the lubricant properties such as saponification value and viscosity of lubricating oils.
- Students will learn how to draw the chemical structures using chem draw/chemsketch softwares.

Course Outcomes:

The experiments will make the student gain skills on:

- Determination of parameters like hardness of water
- Able to perform methods such as conductometry, potentiometry and pH-metry in order to find the concentrations or equivalence points of acids, bases and reducing agents.
- Preparation of polymers like Bakelite and Thiokol rubber.
- Estimation of saponification value and viscosity of lubricating oils.
- Determination of the strength of sulphuric acid in batteries.
- Drawing chemical structures using Chemdraw/chemsketch softwares

List of Experiments:

- **Volumetric Analysis:** Estimation of Hardness of water by EDTA Complexometry method.

- **Conductometry:** Estimation of the concentration of an acid by Conductometry.

- **Potentiometry:** Estimation of the amount of Fe^{+2} by Potentiometry.

- **pH Metry:** Determination of an acid concentration using pH meter.
- Determination of pH of mineral water, soft drinks and fruit juice using universal indicator, universal pH paper and compare with pH-meter.

Preparations:

- Preparation of Bakelite.
- Preparation of Thiokol rubber.

Lubricants:

- Estimation of acid value of given lubricant oil.
- Estimation of Viscosity of lubricant oil using Ostwald's Viscometer.

Battery: Determination of strength of sulphuric acid in Lead-acid battery by acid-base

titration.

Computer based lab(virtual lab):

Draw the following chemical structures using Chemdraw/Chemsketch softwares

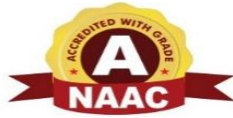i. EDTA   ii. EBT   iii. M-EDTA   iv. M-EBT

REFERENCE BOOKS:

- Lab manual for Engineering chemistry by B. Ramadevi and P. Aparna, S Chand Publications, New Delhi (2022)
- Vogel's text book of practical organic chemistry 5th edition
- Inorganic Quantitative analysis by A.I. Vogel, ELBS Publications.

College Practical Chemistry by V.K. Ahluwalia, Narosa Publications Ltd. New Delhi (2007).

https://www.acdlabs.com/resources/free-chemistry-software-apps/chemsketch-freeware/

SPHOORTHY ENGINEERING COLLEGE
(AUTONOMOUS)
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Programming for Problem Solving Lab

(S24CS108ES)

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

                                                   0 0 2 1

Course Objectives:

- To work with an IDE to create, edit, compile, run and debug programs
- To analyse the various steps in program development.
- To develop programs to solve basic problems by understanding basic concepts in C like operators, control statements etc.
- To develop modular reusable and readable C Programs using the concepts like functions, arrays etc.
- To Write programs using the Dynamic Memory Allocation concept.
- To create, read from and write to text and binary files

Course Outcomes:

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

1. Formulate the algorithms for simple problems
2. Translate given algorithms to a working and correct program
3. Correct syntax errors as reported by the compilers
4. Identify and correct logical errors encountered during execution
5. Represent and manipulate data with arrays, strings and structures
6. Use pointers of different types
7. Create, read and write to and from simple text and binary files
8. Modularize the code with functions so that they can be reused.

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. Read percentage from standard 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:

     e.   5 X 1 = 5

     f.   5 X 2 =10

     g.   5 X 3 =15

h. Write a program that shows the binary equivalent of a given positive number between 0 to 255.

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 $= ut+(1/2) at^2$ where u and a 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 program that finds if a given number is a prime 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 0 and 1. Subsequent terms are found by adding the preceding two terms in the sequence. Write a C program to generate the first n terms of the sequence.

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.

h. Write a C program to calculate the following, where x is a fractional value.

i. $1-x/2 +x^2/4-x^3/6$

j. Write a C program to read in two numbers, x and n, and then compute the sum of this geometric progression: $1+x+x^2+x^3+\ldots+x^n$. For example: if n is 3 and x is 5, then the program computes 1+5+25+125.

Arrays, Pointers and Functions:

a. Write a C program to find the minimum, maximum and average in an array of integers.

b. Write a function to compute mean, variance, Standard Deviation, sorting of n elements in a single dimension array.

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

d. Addition of Two Matrices

e. Multiplication of Two Matrices

f. Transpose of a matrix with memory dynamically allocated for the new matrix as row and column counts may not be the same.

g. Write C programs that use both recursive and non-recursive functions

h. To find the factorial of a given integer.

i. To find the GCD (greatest common divisor) of two given integers.

j. To find x^n

k. Write a program for reading elements using a pointe r into an array and display the values using the array.

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

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

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, replacing all lowercase characters with their uppercase equivalents.

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 that does the following:
It should first create a binary file and store 10 integers, where the filename and 10 values are given in the command line. (hint: convert the strings using atoi function)
Now the program asks for an index and a value from the user and the value at that index should be changed to the new value in the file. (hint: use fseek function)
The program should then read all10 values and print them back.

e.   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).

Strings:

a.   Write a C program to convert a Roman numeral ranging from I to L to its decimal equivalent.

b.   Write a C program that converts a number ranging from1 to 50 to Roman equivalent

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

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

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

f.   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.)

g.   Write a C program that displays the position of a character ch in the string S or -1 if S doesn't contain ch.

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

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          *
1 2            * *       2 3       2 2        * *
1 2 3          * * *     4 5 6     3 3 3      * * *
```

4 4 4 4   * *
                                                      *

Sorting and Searching:
a.   Write a C program that uses non recursive function to search for a Key value in a given
b.   list of integers using linear search method.
c.   Write a C program that uses non recursive function to search for a Key value in a given
d.   Sorted list of integers using binary search method.
e.   Write a C program that implements the Bubble sort method to sort a given list of
f.   Integers in ascending order.
g.   Write a C program that sorts the given array of integers using selection sort in descending order
h.   Write a C program that sorts the given array of integers using insertion sort in ascending order
i.   Write a C program that sorts a given array of names

Text Books:
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, (3rd Edition)

Reference Books:
1.   Brian W.Kernighan and Dennis M.Ritchie, The C Programming Language, PHI
2.   E.Balaguruswamy, Computer fundamentals and C, 2nd Edition, McGraw-Hill
3.   Yashavant Kanetkar, Let Us C,18th Edition, BPB
4.   R. G. Dromey, How to solve it by Computer, Pearson (16th Impression)
5.   Programming in C, Stephen G. Kochan, Fourth Edition, Pearson Education.
6.   Herbert Schildt, C: The Complete Reference, McGraw Hill, 4th Edition
7.   Byron Gottfried, Schaum's Outline of Programming with C, Mc Graw-Hil

BASIC ELECTRICAL ENGINEERING LABORATORY

(S24EE109ES)

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

Prerequisites: Basic Electrical Engineering

Course Objectives:

- To measure the electrical parameters for different types of DC and AC circuits usingconventional and theorems approach.
- To study the transient response of various R, L and C circuits using different excitations.
- To determine the performance of different types of DC, AC machines and Transformers.

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

- Verify the basic Electrical circuits through different experiments.
- Evaluate the performance calculations of Electrical Machines and Transformers throughvarious testing methods.
- Analyze the transient responses of R, L and C circuits for different input conditions.

List of experiments/demonstrations:

PART- A (compulsory)

1. Verification of KVL and KCL
2. Verification of Thevenin's and Norton's theorem
3. Transient Response of Series RL and RC circuits for DC excitation
4. Resonance in series RLC circuit
5. Calculations and Verification of Impedance and Current of RL, RC and RLC seriescircuits
6. Measurement of Voltage, Current and Real Power in primary and Secondary Circuits of aSingle-Phase Transformer
7. Performance Characteristics of a DC Shunt Motor
8. Torque-Speed Characteristics of a Three-phase Induction Motor.

PART-B (any two experiments from the given list)

1. Verification of Superposition theorem.
2. Three Phase Transformer: Verification of Relationship between Voltages and Currents(Star-Delta, Delta-Delta, Delta-star, Star-Star)
3. Load Test on Single Phase Transformer (Calculate Efficiency and Regulation)
4. Measurement of Active and Reactive Power in a balanced Three-phase circuit
5. No-Load Characteristics of a Three-phase Alternator

TEXT BOOKS:

1. D.P. Kothari and I. J. Nagrath, "Basic Electrical Engineering", Tata McGraw Hill, 4th Edition,2019.
2. MS Naidu and S Kamakshaiah, "Basic Electrical Engineering", Tata McGraw Hill, 2nd Edition,2008.

REFERENCE BOOKS:

1. P. Ramana, M. Suryakalavathi, G.T.Chandrasheker,"Basic Electrical Engineering", S. Chand,2nd Edition, 2019.
2. D. C. Kulshreshtha, "Basic Electrical Engineering", McGraw Hill, 2009
3. M. S. Sukhija, T. K. Nagsarkar, "Basic Electrical and Electronics Engineering", Oxford, 1st Edition, 2012.
4. Abhijit Chakrabarthi, Sudipta Debnath, Chandan Kumar Chanda, "Basic ElectricalEngineering", 2nd Edition, McGraw Hill, 2021.
5. L. S. Bobrow, "Fundamentals of Electrical Engineering", Oxford University Press, 2011.
6. E. Hughes, "Electrical and Electronics Technology", Pearson, 2010.
7. V. D. Toro, "Electrical Engineering Fundamentals", Prentice Hall India, 1989.

DESIGN THINKING

(S24ME110ES)

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

       0 0 2 1

Course Objectives:

The main objectives of this course are

1. To inculcate attitude to solve societal problems using design thinking tools.
2. To come-up with proper design which further leads to successful products or enterprises.
3. To install a sense of significance towards applying creativity to product and service design.

UNIT 1:

Introduction to Design Thinking: Origin of Design thinking, Importance of Design thinking, UnderstandingDesign thinking: A non- linear process - 5-stage d.school process model, Application of design thinking.

UNIT 2:

Empathy: Difference between Empathy and Sympathy, Role of Empathy in design thinking, Empathy mapping,Understanding empathy tools: Customer Journey map, Persona; Importance ofEmpathizing before Ideating.

Define: Explore define phase in Design Thinking, Methods of Define phase.

UNIT 3:

Ideation : Introduction, Types of Thinking- convergent, divergent, critical and creative thinking; Ideation Methods-Brainstorming, Story boarding, Bingo Selection, Six Thinking Hats, Mind mapping.

UNIT 4:

Prototyping and Testing: Prototyping and methods of prototyping. User testing methods, Advantages anddisadvantages of user Testing/ Validation. Iteration and Pitching.

UNIT 5:

Innovation: Definition, Innovation and creativity, Innovation Triangle- Desirability, Feasibility and Viability;Types of Innovation – Product Innovation, Process Innovation and Business Model Innovation.

Design thinking in various sectors: Design thinking to meet corporate needs.Case studies in InformationTechnology, Finance, Education, Management, Health care and Retail sector.

Text Books:

1. Daniel Ling, Complete Design Thinking Guide for Successful Professionals, Create Space IndependentPublishing, 2015.
2. Andrew Pressman, Design Thinking: A Guide to Creative Problem Solving for Everyone, Routledge Taylorand Francis group, 2019.

Ordinary Differential Equations & Vector Calculus Syllabus

(S24MA201BS)

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

                                                  3 1 0 4

Course Objectives:

To learn
1. Methods of solving the differential equations of first and higher order.
2. Concept, properties of Laplace and inverse Laplace transforms.
3. Solving ordinary differential equations using Laplace transforms techniques.
4. Concept of gradient, divergence, curl and their applications.
5. Line, surface and volume integrals and relations among them.

Course Outcomes:

After learning the content of this course, students will be able to
1. Recognise and solve first-order differential equations, and apply this to Newton's law of cooling and the Law of natural growth and decay.
2. Solve higher order linear differential equation with constant coefficients and few specific non homogeneous terms.
3. Find Laplace and Inverse Laplace transform of various functions and apply it to solve ordinary differential equations.
4. Evaluate the tangent planes and normal lines of any given surface.
5. Evaluate the line, surface and volume integrals and establish the relation among them.

UNIT-I: First Order ODE   **8L**

Exact differential equations, Equations reducible to exact differential equations, linear and Bernoulli's equations, Orthogonal Trajectories (only in Cartesian Coordinates). Applications: Newton's law of cooling, Law of natural growth and decay.

UNIT-II: Ordinary Differential Equations of Higher Order   **10L**

Higher order linear differential equations with constant coefficients: Non-Homogeneous terms of the type $e^{ax}, \sin$, $\cos ax$, polynomials in x, $e^{ax}V(x)$ and $xV(x)$, method of variation of parameters, Equations reducible to linear ODE with constant coefficients: Legendre's equation, Cauchy-Euler equation. Applications: Electric Circuits

UNIT-III: Laplace Transforms   **10L**

Laplace Transforms: Laplace Transform of standard functions, First shifting theorem,

Second shifting theorem, Unit step function, Dirac delta function, Laplace transforms of functions when they are multiplied and divided by 't', Laplace transforms of derivatives and integrals

of function, Evaluation of integrals by Laplace transforms, Laplace transform of periodic functions, Inverse Laplace transform by different methods, convolution theorem (without proof). Applications: solving Initial value problems by Laplace Transform method.

UNIT-IV: Vector Differentiation   **10L**

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

UNIT-V: Vector Integrations   **10L**

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

Text Books:

1. B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010.
2. R.K. Jain and S.R.K. Iyengar, Advanced Engineering Mathematics, Narosa Publications, 5 th Edition, 2016.

Reference Books:

1. Erwin Kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley & Sons, 2006.
2. G.B. Thomas and R.L. Finney, Calculus and Analytic geometry, 9th Edition, Pearson, Reprint, 2002.
3. H. K. Dass and Er. Rajnish Verma, Higher Engineering Mathematics, S Chand and Company Limited, New Delhi.
4. N.P. Bali and Manish Goyal, A text book of Engineering Mathematics, Laxmi Publications, Reprint, 2008.

APPLIED PHYSICS

(S24PH202BS)

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

                                                              3 1   0 4

Course Objectives:

To learn

1. Understand the basics principles of quantum physics and band theory of solids.
2. Understand the underlying mechanism involved in construction and working principles of various semiconductor devices.
3. Study the fundamental concepts related to the dielectric, magnetic and energy materials.
4. Identify the importance of nanoscale, quantum confinement, various fabrication and characterization techniques.
5. Study the characteristics of lasers and optical fibers.

Course Outcomes:

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

1. Analyze the physical world from a fundamental perspective using the concepts of quantum mechanics.
2. Classifying solids based on energy gap to examine the role of semiconductor devices in science and engineering applications.
3. Explore the fundamental properties of dielectric and magnetic materials for diverse applications.
4. Demonstrate the features, synthesis mechanisms and applications of Nanomaterials.
5. Apply the concepts of Lasers and Optical fiber in diverse fields.

UNIT - I: Quantum Physics (15 hrs)

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

UNIT - II: Classification of Solids, Semiconductors and Optoelectronic Devices (15 hrs)

Free Electron theory, Bloch's theorem -Kronig-Penney model – E-K diagram- origin of energy bands and classification of solids. Intrinsic and extrinsic semiconductors – Drift and Diffusion - Hall effect - direct and indirect band gap semiconductors - construction, principle of operation and characteristics of P-N Junction diode, Zener diode. Generation and

Recombination, Structure, working principle and applications of –LED, Photodiode, PIN diode and solar cells.

UNIT - III: Dielectric and Magnetic materials (10 hrs)

Dielectric Materials: Basic definitions, Types of polarizations-Electronic, Ionic and orientation polarization (qualitative), ferroelectric, piezoelectric and pyroelectric materials - applications.

Magnetic materials: Origin of magnetic moment – Classification of magnetic materials – Weiss domain theory of ferromagnetism - Hysteresis- soft and hard magnetic materials - magnetostriction - magnetoresistance – applications.

UNIT - IV: Nanotechnology (08 hrs)

Introduction to Nanotechnology, Classification of nano materials (based on Dimension), Quantum confinement - surface to volume ratio - bottom-up fabrication- sol-gel - combustion methods - top-down fabrication- Ball milling - Physical vapour deposition (PVD) - Chemical vapour deposition (CVD) - characterization techniques- X-ray diffraction - Scanning Electron Microscope -Transmission Electron Microscope - Applications of nanomaterials.

UNIT- V: Laser and Fiber Optics (12 hrs)

Lasers: Laser beam characteristics - Einstein coefficients and their relations - Population Inversion - lasing action- Ruby laser - He-Ne laser - CO_2 laser –Semiconductor laser - Applications of laser.

Fiber Optics: Introduction - Total Internal Reflection - Construction of optical fiber - acceptance angle - numerical aperture - classification of optical fibers - losses in optical fiber - optical fiber for communication system- advantages and applications of optical fibers.

Learning Resources:
1. M.N. Avadhanulu, P.G. Kshirsagar, TVS Arun Murthy, "A Textbook of Engineering Physics", S Chand Publications, 11th Edition 2019.
2. Donald A, Neamen, "Semiconductor Physics and Devices- Basic Principle", Mc Graw Hill, 4th Edition 2021.
3. B.K. Pandey and S. Chaturvedi, Engineering Physics, Cengage Learning, 2nd Edition 2022.
4. Essentials of Nanoscience and Nanotechnology by Narasimha Reddy Katta, Typical Creatives Nanodigest 1st Edition 2021.

Web Resources:
1. https://nptel.ac.in/courses/115102023 (Quantum Mechanics and Applications by Prof. Ajoy Ghatak, IIT Delhi Lecture 1 and 2).
2. https://onlinecourses.nptel.ac.in/noc22_ee13/preview (Fundamentals of Semiconductor devices by Prof. Digbijoy N. Nath, IISc Bangalore Week1 to Week 5).
3. https://www.coursera.org/learn/nanotechnology#syllabus (Nanotechnology: A Maker's course by Coursera)
4. https://onlinecourses.nptel.ac.in/noc23_ph33/preview (Introduction to Laser by Prof. M. R. Shenoy, IIT Delhi Week 1, Week3, Week4, Week 11, Week 12).

ENGINEERING WORKSHOP

(S24ME203ES)

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

                                                         0   1   3   2.5

Course Objectives:

To learn

1. To Study of different hand operated power tools, uses and their demonstration.

2. To gain a good basic working knowledge required for the production of various engineering products.

3. To provide hands on experience about use of different engineering materials, tools, equipment and processes those are common in the engineering field.

4. To develop a right attitude, team working, precision and safety at work place.

5. It explains the construction, function, use and application of different working tools, equipment and machines.

6. To study commonly used carpentry joints.

7. To have practical exposure to various welding and joining processes.

8. Identify and use marking out tools, hand tools, measuring equipment and to work to prescribed tolerances.

Course Outcomes:

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

1. Operate on machine tools and their operations with exposure towards 3-D printing.

2. Practice on manufacturing of components using workshop trades including plumbing, fitting, carpentry and welding.

3. Identify and apply suitable tools for different trades of engineering processes including drilling, material removing, measuring, chiseling.

4. Apply basic electrical engineering knowledge for house wiring practice.

5. Create different models in Tin -Smithy and Prepare different moulds in Foundry.

1. TRADES FOR EXERCISES:

At least two exercises from each trade:

I. Carpentry – (**Planing Practice & Cutting**,T-Lap Joint, Dovetail Joint,
   Mortise & Tenon Joint)

II. Fitting – (**Cutting & Square Filing,**V-Fit, **Square** Fit & Semi-circular fit)

III. Tin-Smithy – (Square Tin, Rectangular Tray & Conical **Making**)

IV. Foundry – (Preparation of Green Sand Mould using Single Piece and Split Pattern)

V. Welding Practice – (Arc Welding & **Soldering)**

VI. House-wiring – (Parallel & Series, Two-way Switch and Tube Light)

VII. Black Smithy – (Round to Square, Fan Hook and S-Hook)

2. TRADES FOR DEMONSTRATION & EXPOSURE: (Any Four)

Plumbing, **3-D printing, Laser cutting, Introduction to Pneumatics,** Power tools in construction and Wood Working.

TEXT BOOKS:

1. Workshop Practice /B. L. Juneja / Cengage

2.Workshop Manual / K. Venugopal / Anuradha.

REFERENCE BOOKS:

1. Work shop Manual - P. Kannaiah/ K.L. Narayana/ Scitech

2. Workshop Manual / Venkat Reddy/ BSP

ENGLISH FOR SKILL ENHANCEMENT

(S24EN204HS)

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

                                                                              2 0 0 2

Course Objectives :

- Improve the language proficiency of students in English with an emphasis on
- Reading and Writing skills.
- Develop study skills and communication skills in various professional situations.
- Equip students to study engineering subjects more effectively and critically using the theoretical and practical components of the syllabus.

Course Outcomes :

After learning the content of this course, Students will be able to:

1. Understand the importance of reading and writing and acquire basic proficiency in reading and writing modules of English
2. Choose appropriate expressions and sentence structures for their oral and written communication.
3. Develop comprehension skills from the known and unknown passages.
4. Take an active part in drafting paragraphs, letters, essays, abstracts, précis and reports in various contexts.
5. Students would be able to create substantial base by the formation of strong professional vocabulary

UNIT-I

Chapter entitled '*Toasted English*' **by R.K.Narayan** from *"English: Language, Context and Culture"* published by Orient Black Swan, Hyderabad.

Vocabulary: The Concept of Word Formation -The Use of Prefixes and Suffixes – Acquaintance with Prefixes and Suffixes from Foreign Languages to form Derivatives - Synonyms and Antonyms **Grammar:** Identifying Common Errors in Writing with Reference to Articles and Prepositions.

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

Writing: Sentence Structures - Use of Phrases and Clauses in Sentences - Importance of Proper Punctuation –Techniques for Writing precisely – Paragraph Writing – Types, Structures and Features of a Paragraph – Creating Coherence - Organizing Principles of Paragraphs in Documents.

UNIT-II

Chapter entitled **'Appro JRD' by Sudha Murthy** from *"English: Language, Context and Culture " published* by Orient Black Swan, Hyderabad.

Vocabulary: Words Often Miss pelt - Homophones, Homonyms and Homographs

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

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

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

UNIT-III

Chapter entitled **'Lessons from Online Learning' by F. Haider Alvi, Deborah Hurst etal** from

"English : Language, Context and Culture" published by Orient Black Swan, Hyderabad. **Vocabulary** : Words Often Confused - Words from Foreign Languages and their Use in English. **Grammar :** Identifying Common Errors in Writing with Reference to Misplaced Modifiers and Tenses.

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

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

UNIT-IV

Chapter entitled **'Art and Literature' by Abdul Kalam** from *"English : Language,Context and Culture"* published by Orient Black Swan, Hyderabad.

Vocabulary : Standard Abbreviations in English

Grammar : Redundancies and Clichés in Oral and Written Communication.

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

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

UNIT-V

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

Vocabulary : Technical Vocabulary and their Usage

Grammar : Common Errors in English (*Covering all the other aspects of grammar which were not*

 covered in the previous units)

Reading : Reading Comprehension - Exercises for Practice

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

Note : *Listening and Speaking Skills which are given under Unit-6 in AICTE Model Curriculum are covered in the syllabus of ELCS Lab Course.*

- **Note**: **1**. As the syllabus of English given in AICTE *Model Curriculum-2018 for B.Tech First Year*
- *is **Open-ended**,* besides following the prescribed textbook, it is required to prepare teaching
  /learning materials **by the teachers collectively** in the form of handouts based on the needs of the
  students in their respective colleges for effective teaching /learning in the class.
- **Note**: **2**. Based on the recommendations of NEP2020, teachers are requested to be flexible to
- adopt Blended Learning in dealing with the course contents. They are advised to teach 40 percent of
  each topic from the syllabus in blended mode.

Text Book:

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

Reference Books:

1. Effective Academic Writing by Liss and Davis (OUP)
2. Richards, Jack C. (2022) Interchange Series. Introduction, 1,2,3. Cambridge University Press
3. Wood, F.T. (2007). Remedial English Grammar. Macmillan.
4. Chaudhuri, Santanu Sinha. (2018). Learn English : A Fun Book of Functional Language, Grammar and Vocabulary. (2nd ed.,). Sage Publications India Pvt. Ltd.
   5. (2019). Technical Communication. Wiley India Pvt. Ltd.
6. Vishwamohan, Aysha. (2013). English for Technical Communication for Engineering Students. Mc Graw-Hill Education India Pvt. Ltd.
7. Swan, Michael. (2016). Practical English Usage. Oxford University Press. Fourth Edition.

Web Resources:

GRAMMAR:

1. www.bbc.co.uk/learningenglish

2. https://dictionary.cambridge.org/grammar/british-grammar/

3. www.eslpod.com/index.html

4. https://www.learngrammar.net/

5. https://english4today.com/english-grammar-online-with-quizzes/

6. https://www.talkenglish.com/grammar/grammar.aspx

VOCABULARY

1. https://www.youtube.com/c/DailyVideoVocabulary/videos

2. https://www.youtube.com/channel/UC4cmBAit8i_NJZE8qK8sfpA

Electronic Devices and Circuits

(S24EC205ES)

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

                                                                           2   0   0   2

Course Objectives:

1. To introduce components such as diodes, BJTs and FETs.
2. To know the applications of devices.
3. To know the switching characteristics of devices.

Course Outcomes:

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

1. Acquire the knowledge of various electronic devices and their use on real life.
2. Know the applications of various devices.
3. Acquire the knowledge about the role of special purpose devices and their applications.

UNIT - I

Diodes: Diode - Static and Dynamic resistances, Equivalent circuit, Diffusion and Transition Capacitances, V-I Characteristics, Diode as a switch- switching times.

UNIT - II

Diode Applications: Rectifier - Half Wave Rectifier, Full Wave Rectifier, Bridge Rectifier, Rectifiers with Capacitive and Inductive Filters, Clippers-Clipping at two independent levels, Clamper-Clamping Circuit Theorem, Clamping Operation, Types of Clampers.

UNIT - III

Bipolar Junction Transistor (BJT): Principle of Operation, Common Emitter, Common Base and Common Collector Configurations, Transistor as a switch, switching times,

UNIT - IV

Junction Field Effect Transistor (FET): Construction, Principle of Operation, Pinch-Off Voltage, Volt- Ampere Characteristic, Comparison of BJT and FET, FET as Voltage Variable Resistor, MOSFET, MOSTET as a capacitor.

UNIT – V

Special Purpose Devices: Zener Diode **-** Characteristics, Zener diode as Voltage Regulator, Principle of Operation - SCR, Tunnel diode, UJT, Varactor Diode, Photo diode, Solar cell, LED, Schottky diode.

TEXT BOOKS:

1. Jacob Millman - Electronic Devices and Circuits, McGraw Hill Education
2. Robert L. Boylestead, Louis Nashelsky- Electronic Devices and Circuits theory, 11th Edition, 2009, Pearson**.**

REFERENCE BOOKS:

1. Horowitz -Electronic Devices and Circuits, David A. Bell – 5thEdition, Oxford.
2. Chinmoy Saha, Arindam Halder, Debaati Ganguly - Basic Electronics-Principles and Applications, Cambri

PYTHON PROGRAMMING LABORATORY

(S24CS206ES)

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

                                                                  1 2 2 0

Course Objectives:
1. To install and run the Python interpreter
2. To learn control structures.
3. To Understand Lists, Dictionaries in python
4. To Handle Strings and Files in Python

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

1. Develop the application specific codes using python.
2. Understand Strings, Lists, Tuples and Dictionaries in Python
3. Verify programs using modular approach, file I/O, Python standard library
4. Implement Digital Systems using Python.

Week-1:
1. i) Use a web browser to go to the Python website http://python.org. This page contains information about Python and links to Python-related pages, and it gives you the ability to search the Python documentation.
   ii) Start the Python interpreter and type help () to start the online help utility.
2. Start a Python interpreter and use it as a Calculator.
3.
   1) Write a program to calculate compound interest when principal, rate and number of
   2) periods are given.
   3) Given coordinates (x1, y1), (x2, y2) find the distance between two points
4. Read name, address, email and phone number of a person through key board and print the details.

Week-2:
1. Print the below triangle
   using for loop.5
   4 4
   3 33
   2 222
   1 1111
2. Write a program to check whether the given input is digit or lowercase character or uppercase character or a special character (use 'if-else-if' ladder)
3. Python Program to Print the Fibonacci sequence using while loop
4. Python program to print all prime numbers in a given interval (use break)

Week-3:

1. i) Write a program to convert a list and tuple into arrays.
   ii)Write a program to find common values between two arrays.

2. Write a function called gcd that takes parameters a and band returns their greatest common divisor.
3. Write a function called palindrome that takes a string argument and returns True if it is a palindrome and False otherwise. Remember that you can use the built-in function lento check the length of a string.

Week-4:

1. Write a function called is _sorted that takes a list as a parameter and returns True if the list is sorted in ascending order and False otherwise.
2. Write a function called has_ duplicates that takes a list and returns True if there is any element that appears more than once. It should not modify the original list.

   i) Write a function called remove_ duplicates that takes a list and returns a new list with only the unique elements from the original. Hint: they don't have to be in the same order.
   ii) The wordlist I provided, words.txt, doesn't contain single letter words. So you might want to add "I ", "a ",and the empty string.
   iii) Write a python code to read dictionary values from the user. Construct a function to invert its content. i.e ., keys should be values and values should be keys.

3. i) Add a comma between the characters. If the given word is 'Apple ',it should become 'A,p,p,l,e''.
   ii) Remove the given word in all the places in a string?
   iii)Write a function that takes a sentence as an input parameter and replaces the first letter of every word with the corresponding uppercase letter and there stop the letters in the word by corresponding letters in lowercase without using a built-in function?
4. Writes a recursive function that generates all binary strings of n-bit length

Week-5:

1. i)Write a python program that defines a matrix and prints
   ii) Write a python n program to perform addition of two square matrices
   iii)Write a python program to perform multiplication of two square matrices
2. Ho do you make a module? Give an example of construction of a module using different geometrical shapes and operations on them as its functions.
3. Use the structure of exception handling all general purpose exceptions.

Week-6:

1. a. Write a function called draw_ rectangle that takes a Canvas and a Rectangle as arguments and draws a representation of the Rectangle on the Canvas.
   b. Add an attribute named color to your Rectangle objects and modify draw_ rectangle so that it uses the color at tribute as the fill color.
   c. Write a function called draw_ point that takes a Canvas and a Point as arguments and draws are presentation of the Point on the Canvas.
   d. Define a new class called Circle with appropriate attributes and instantiate a few Circle objects. Write a function called draw_ circle that draws circles on the canvas.
2. Write a Python program to demonstrate the usage of Method Resolution Order (MRO) in multiple levels of Inheritances.
3. Write a python code to read a phone number and email-id from the user and validate it for correctness.

Week-7

1. Write a Python code to merge two given file contents into a third file.
2. Write a Python code to open a given file and construct a function to check forgiven words present in it and display on found.
3. Write a Python code to Read text from a text file, find the word with most number of occurrences
4. Write a function that reads a file *file1* and displays the number of words, number of vowels, blank spaces, lowercase letters and uppercase letters.

Week-8:

1. Import numpy, Plotpy and Scipy and explore their functionalities.
2. a) Install NumPy package with pip and explore it.
3. Write a program to implement Digital Logic Gates–AND, OR, NOT, EX-OR
4. Write a program to implement Half Adder, Full Adder, and Parallel Adder
5. Write a GUI program to create a window wizard having two text labels, two text fields and two buttons as Submit and Reset.

Week-9

1. Create a class Car with attributes like brand, model, and year. Define a method car_details() that prints the details of the car. Create an object of this class and call the method to display the car's details.
2. Create a class Animal with a method sound() that prints "This animal makes a sound." Create a subclass Dog that inherits from Animal and overrides the sound() method to print "The dog barks." Demonstrate the inheritance and method overriding.
3. Create two classes, Cat and Bird, both having a method speak() that prints a different message for each class. Write a function that takes an object and calls its speak() method. Demonstrate polymorphism by passing objects of both classes to this function.

Text Books:

1.Super charged Python: Take your code to the next level, Overland Learning Python, MarkLutz,O'reilly

Reference Books:

1. Python for Data Science, Dr. Mohd. Abdul Hameed, Wiley Publications-1stEd.2021.
2. Python Programming: A Modern Approach, Vamsi Kurama, Pearson
3. Python Programming A Modular Approach with Graphics, Database, Mobile, and Web Applications, Sheetal Taneja, Naveen Kumar, Pearson
4. Programming with Python, A User's Book, Michael Dawson, Cengage Learning, India Edition
5. Think Python, Allen Downey, Green Tea Press
6. Core Python Programming, W. Chun, Pearson
7. Introduction to Python, Kenneth A. Lambert, Cengage

APPLIED PHYSICS LABORATORY

(S24PH207BS)

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

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Course Objectives:

- Capable of handling instruments related to the Hall effect and photoelectric effect experiments   and their measurements.
- Understand the characteristics of various devices such as PN junction diode, Zener diode, LED, solar cell, lasers and optical fiber and measurement of energy gap and resistivity of semiconductor materials.
- Able to measure the characteristics of dielectric constant of a given material.
- Study the behavior of B-H curve of ferromagnetic materials.
- Understanding the method of least squares fitting.

Course Outcomes:

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

1. Know the determination of the Planck's constant using Photo electric effect and identify the   material whether it is n-type or p-type by Hall experiment.
2. Appreciate quantum physics in semiconductor devices and optoelectronics.
3. Gain the knowledge of applications of dielectric constant.
4. Understand the variation of magnetic field and behavior of hysteresis curve.
5. Carry out data analysis.

List of Experiments:

1. Understanding the method of least squares – torsional pendulum as an example.
2. Determination of work function and Planck's constant using photoelectric effect.
3. Determination of Hall co-efficient and carrier concentration of a given semiconductor.
4. V-I characteristics of a p-n junction diode and Zener diode.
5. a) V-I and L-I characteristics of light emitting diode (LED).
   b) V-I Characteristics of solar cell.
6. Determination of the resistivity of semiconductor by two probe method.
7. Study B-H curve of a magnetic material.
8. Determination of dielectric constant of a given material.
9. Determination of the beam divergence of the given LASER beam
10. Calculate Acceptance angle and Numerical Aperture of Optical Fiber
11. Determination of bending loses in an optical fiber.
12. Any one Experiment from mentioned using virtual labs:
    a) Determination of Stefans Constant

b) Determination of Energy gap of a semiconductor
c) Laser diffraction Grating

Note: Any 08 experiments are to be performed.

Reference Book:

1. S. Balasubramanian, M.N. Srinivasan "A Text book of Practical Physics" – S. Chand Publishers, 2017.

2. Https://www.vlab.co.in/broad-area-physical-sciences

**ENGLISH LANGUAGE AND COMMUNICATION SKILLS
LAB**

(S24EN208HS)

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

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

Course Objectives:

This LAB will enable the students to:
- To sensitize the students to the nuances of English speech sounds, word accent, intonation and rhythm
- To bring about a consistent accent and intelligibility in students' pronunciation of
- English by providing an opportunity for practice in speaking
- To improve the fluency of students in spoken English and neutralize the impact of dialects.
- To train students to use language appropriately for public speaking, group discussions and interviews

Course Outcomes:

After learning the content of this course, the students will be able to
1. Understand the nuances of English language through individual, pair, and group Activities.
2. Speak with clarity and confidence which in turn enhances their employability skills.
3. Develop their listening skills so that they may appreciate the role in the LSRW skills approach to language and improve their pronunciation
4. Speak fluently in various activities viz group discussion, interviews, presentations, and public speaking.
5. Express themselves fluently and appropriately in social and professional contexts.

English Language and Communication Skills Lab (ELCS) shall have two parts: a. Computer Assisted Language Learning (CALL) Lab b. Interactive Communication Skills (ICS) Lab

BASIC COMMUNICATION SKILLS
EXERCISE -I
CALL Lab:
A. Understand: Listening Skill- Its importance – Purpose- Process- Types- Barriers- Effective Listening. Practice: Introduction to Phonetics – Speech Sounds – Vowels and Consonants – Minimal Pairs-Consonant Clusters- Past
Tense Marker and Plural Marker- Testing Exercises
ICS Lab:
B. Understand: Spoken vs. Written language- Formal and Informal English.
Practice: Ice-Breaking Activity and JAM Session- Introducing Oneself and Others.
EXERCISE - II:

CALL Lab:

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

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

ICS Lab:

 B. Understand: Descriptions- Narrations- Giving Directions and Guidelines.

Practice: Situational Dialogues – Greetings – Taking Leave –Giving Instructions – Seeking Clarifications – Asking for and Giving Directions – Thanking and Responding – Agreeing and Disagreeing – Seeking

and Giving Advice – Making Suggestions.

ADVANCED COMMUNICATION SKILLS

EXERCISE - III:

CALL Lab:

A. Understand: Errors in Pronunciation-Neutralizing Mother Tongue Interference (MTI).

Practice: Common Indian Variants in Pronunciation – Differences between British and American Pronunciation -Testing Exercises

 ICS Lab:

B. Understand: Public Speaking – Exposure to Structured Talks - Non-verbal Communication- Presentation Skills.

  Practice: Making a Short Speech – Extempore- Making a Presentation.

EXERCISE - IV

CALL Lab:

A. Understand: Listening for General Details.

   Practice: Listening Comprehension Tests.

ICS Lab:

B. Understand: Interview Skills.

   Practice: Mock Interviews.

EXERCISE- V

CALL Lab:

 A. Understand: Listening for Specific Details.

Practice: Listening Comprehension Tests -Testing Exercises

ICS Lab:

B. Understand: Group Discussion

Practice: Group Discussion

REFERENCE BOOKS:

1. (2022). English Language Communication Skills – Lab Manual cum Workbook. Cengage

Learning India Pvt. Ltd.

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

University Press

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

Press

4. Board of Editors. (2016). ELCS Lab Manual: A Workbook for CALL and ICS Lab Activities.

Orient Black Swan Pvt. Ltd.

5. Mishra, Veerendra et al. (2020). English Language Skills: A Practical Approach. Cambridge

University Press.

6.Strengthen your communication skills, Maruthi publication 2021.

Minimum Requirement of infrastructural facilities for ELCS Lab:
1. **Computer Assisted Language Learning (CALL)Lab:**
The Computer Assisted Language Learning Lab has to accommodate 40 students with 40 systems, with one Master Console, LAN facility and English language learning software for self- study by students.

System Requirement (Hardware component):
Computer network with LAN facility (minimum 40 systems with multimedia) with the following specifications:

         i)   Computers with Suitable Configuration
         ii)   High Fidelity Headphone
2. **Interactive Communication Skills (ICS)Lab:**
The Interactive Communication Skills Lab: A Spacious room with movable chairs and audio- visual aids with a Public Address System, a T.V or LCD, a digital stereo –audio & video system and camcorder etc.

     Source of Material (Master Copy):
- *Exercises in Spoken English. Part1,2,3*. CIEFL and Oxford University Press

Note: Teachers are requested to make use of the master copy and get it tailor-made to suit the contents of the syllabus

Suggested Software:

- Cambridge Advanced Learners' English Dictionary with CD.
- Grammar Made Easy by Darling Kindersley.
- Punctuation Made Easy by Darling Kindersley.
- OxfordAdvancedLearner'sCompass,10th Edition.
- English in Mind(Series1-4),Herbert Puchta and Jeff Stranks with Meredith Levy, Cambridge.
- English Pronunciation in Use(Elementary, Intermediate, Advanced) Cambridge University Press.
- English Vocabulary in Use (Elementary , Intermediate ,Advanced)Cambridge University Press.
- TOEFL & GRE(KAPLAN ,AARCO & BARRONS, USA ,Cracking GRE by CLIFFS).
- Digital All
- Oral Digital Language Lab(Licensed Version)

Reference Books:

1. (2022). English Language Communication Skills – Lab Manual cum Workbook. Cengage Learning India Pvt. Ltd.
2. Shobha, KN & Rayen, J. Lourdes. (2019). Communicative   English – A workbook. Cambridge University Press
3. Kumar, Sanjay & Lata, Pushp. (2019). Communication Skills: A Workbook. Oxford University Press
4. Board of Editors. (2016). ELCS Lab Manual: A Workbook for CALL and ICS Lab Activities Orient Black Swan Pvt. Ltd.
5. Mishra, Veerendra et al. (2020). English Language Skills: A Practical Approach. Cambridge University Press.
6. Strengthen your communication skills, Maruthi publication 2021.

Web Resources
Spoken English:

1. www.esl-lab.com

 2. www.englishmedialab.com

3. www.englishinteractive.net

 4. https://www.britishcouncil.in/english/online

5. http://www.letstalkpodcast.com/

6. https://www.youtube.com/c/mmmEnglish_Emma/featured

 7. https://www.youtube.com/c/ArnelsEverydayEnglish/featured

8. https://www.youtube.com/c/engvidAdam/featured

9. https://www.youtube.com/c/EnglishClass101/featured

10. https://www.youtube.com/c/SpeakEnglishWithTiffani/playlists

11. https://www.youtube.com/channel/UCV1h_cBE0Drdx19qkTM0WNw

Voice & Accent:

1. https://www.youtube.com/user/letstalkaccent/videos

2. https://www.youtube.com/c/EngLanguageClub/featured

3. https://www.youtube.com/channel/UC_OskgZBoS4dAnVUgJVexc

4. https://www.youtube.com/channel/UCNfm92h83W2i2ijc5Xwp_IA

IT WORKSHOP

(S24CS209ES)

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

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Course Objectives: The IT Workshop for engineers is a training lab course spread over 60 hours. The modules include training on PC Hardware, Internet & World Wide Web and Productivity tools including Word, Excel, PowerPoint and Publisher.

Course Outcomes:

- Perform Hardware troubleshooting
- Understand Hardware components and inter dependencies
- Safeguard computer systems from viruses/worms
- Document/ Presentation preparation
- Perform calculations using spreadsheets

PC Hardware

Task 1: Identify the peripherals of a computer, components in a CPU and its functions. Draw the block diagram of the CPU along with the configuration of each peripheral and submit to your instructor.

Task 2: Every student should disassemble and assemble the PC back to working condition. Lab instructors should verify the work and follow it up with a Viva. Also students need to go through the video which shows the process of assembling a PC. A video would be given as part of the course content.

Task 3: Every student should individually install MS windows on the personal computer. Lab instructor should verify the installation and follow it up with a Viva.

Task 4: Every student should install Linux on the computer. This computer should have windows installed. The system should be configured as dual boot with both Windows and Linux. Lab instructors should verify the installation and follow it up with a Viva

Computer Networks:

Task 1: Advantages of computer networks, LAN, WAN, MAN

Task 2: Internet, Wi-Fi, sensor networks, vehicular networks, 5G communication.

Task 3: World Wide Web – Basics, role of HTML, CSS, XML, Tools for web designing.

Task 4: Social media, online social networks.

Task 5: Security – information security, cyber security, cyber laws

Latex and WORD

Task 1 – Word Orientation: The mentor needs to give an overview of Latex and Microsoft (MS) office or equivalent (FOSS) tool word: Importance of Latex and MS office or equivalent (FOSS) tool Word as word Processors, Details of the four tasks and features that would be covered in each, Using Latex and word – Accessing, overview of toolbars, saving files, Using help and resources, rulers, format painter in word.

Task 2: Using Latex and Word to create a project certificate. Features to be covered:- Formatting Fonts in word, Drop Cap in word, Applying Text effects, Using Character Spacing, Borders and Colors,Inserting Header and Footer, Using Date and Time option in both LaTeX and Word.

Task 3: Creating project abstract Features to be covered:-Formatting Styles, Inserting table, Bullets and Numbering, Changing Text Direction, Cell alignment, Footnote, Hyperlink, Symbols, Spell Check, Track Changes.

Task 4: Creating a Newsletter: Features to be covered:- Table of Content, Newspaper columns, Images from files and clipart, Drawing toolbar and Word Art, Formatting Images,

Textboxes, Paragraphsand Mail Merge in word.

Excel

Excel Orientation: The mentor needs to tell the importance of MS office or equivalent (FOSS) tool Excel as a Spreadsheet tool, give the details of the four tasks and features that would be covered in each. Using Excel – Accessing, overview of toolbars, saving excel files, Using help and resources.

Task 1: Creating a Scheduler - Features to be covered: Gridlines, Format Cells, Summation, auto fill,Formatting Text

Task 2 : Calculating GPA - .Features to be covered:- Cell Referencing, Formulae in excel – average, std. deviation, Charts, Renaming and Inserting worksheets, Hyper linking, Count function, LOOKUP/VLOOKUP

Task 3: Split cells, freeze panes, group and outline, Sorting, Boolean and logical operators, Conditionalformatting

PowerPoint

Task 1: Students will be working on basic power point utilities and tools which help them create basic powerpoint presentations. PPT Orientation, Slide Layouts, Inserting Text, Word Art, Formatting Text, Bullets and Numbering, Auto Shapes, Lines and Arrows in PowerPoint.

Task 2: Interactive presentations - Hyperlinks, Inserting –Images, Clip Art, Audio, Video, Objects, Tables and Charts.

Task 3: Master Layouts (slide, template, and notes), Types of views (basic, presentation, slide slotter,notes etc), and Inserting – Background, textures, Design Templates, Hidden slides.

REFERENCE BOOKS:

1. Comdex Information Technology course tool kit Vikas Gupta, *WILEY Dreamtech*
2. The Complete Computer upgrade and repair book, 3rd edition Cheryl A Schmidt, *WILEYDreamtech*
3. Introduction to Information Technology, ITL Education Solutions limited, *Pearson Education.*
4. PC Hardware - A Handbook – Kate J. Chase *PHI* (Microsoft)
5. LaTeX Companion – Leslie Lamport, *PHI/Pearson*.
6. IT Essentials PC Hardware and Software Companion Guide Third Edition by David Anfinsonand Ken Quamme. – *CISCO Press, Pearson Education.*
7. **Computer Networks; by Andrew S. Tanenbaum and David J. Wetherall, Pearson**.
8. IT Essentials PC Hardware and Software Labs and Study Guide Third Edition by Patrick Regan
   – CISCO Press, *Pearson Education.*

UNIVERSAL HUMAN VALUES (UHV)

(S24*MC210)

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

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Course Objectives:

1. To instill among the Engineering professionals, the need to follow ethical principles in life.
2. To help students initiate a process of dialog within themselves to know what they 'really want to be' in their life and profession
3. To help students understand the meaning of happiness and prosperity for a human being.
4. To inculcate a sense of moral responsibility and professional ethics as Engineers.
5. To facilitate the students in applying the understanding of harmony in existence in their profession and lead an ethical life

UNIT 1: Understanding Value Education:

Basic Concepts: Moral and Morality, Ethics, Values, Principles – Thoughts of Ethics: Indian Thought versus Global Thought – Objectives of Value Education – Importance of Value Education – Personal Ethics – Professional Ethics.

UNIT II: Understanding Harmony in the Human Being & Family

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'

Harmony and Values in Relationships in the Family- the basic unit of human interaction, Trust (Vishwas) and Respect (Samman) as the foundational values of relationship, Understanding the meaning of Vishwas & Samman; Difference between intention and competence,

UNIT III: Understanding Harmony in the Society & Nature

Understanding the harmony in the society: Samadhan, Samridhi, Abhay, Sah-astitva as comprehensive Human Goals, Visualizing Undivided Society (Akhand Samaj), Universal Order (SarvabhaumVyawastha).

Whole existence as Co-existence Understanding the harmony in the Nature, Interconnectedness and mutual fulfilment among the four orders of nature- recyclability and self-regulation in nature

UNIT 4: Professional Ethics:

Profession and Professionalism – Ethics in Engineering – Role of Engineers – Responsibilities of Engineers – Engineering Code of Ethics – Ethical Dilemmas– CASE STUDIES.

UNIT V: Exploring Attitudes towards gender

Understanding gender and Basic Gender Concepts/terminology- exploring attitude towards gender-construction of gender- socialization: Making Women, making Men.

Text Books:

1. R R Gaur, R Sangal, G P Bagaria, 2009, A Foundation Course in Human Values andProfessional Ethics.
2. Towards a World of Equals: a bilingual Textbook on Gender. A Suneetha, and others… Telugu Academy, Telangana Gov. 2015

References:

1. Fundamentals of Ethics for Scientists and Engineers by Edmund G,SeeBauer, Robert L, Barry Oxford University Press, 2015.
2. Professional Ethics by R.Subramanian, Oxford University Press, 2013