

COURSE STRUCTURE**I SEMESTER**

S.No	Course code	Course Title	Contact hours/week				Credits	Scheme of Valuation		
			L	T	P	Total		CIE	SEE	Total
1	17FE01	Professional Communication-I	3	-	-	3	3	40	60	100
2	17FE05	Differential Equations and Numerical Applications	3	2	-	5	4	40	60	100
3	17FE15	Engineering Chemistry	4	-	-	4	4	40	60	100
4	17CI01	Computer Programming	2	2	-	4	3	40	60	100
5	17EC02	Electronic Devices and Circuits	2	2	-	4	3	40	60	100
6	17FE65	Engineering Chemistry Lab	-	-	2	2	1	40	60	100
7	17CI60	Computer Programming Lab	-	-	2	2	1	40	60	100
8	17EC61	Electronic Devices and Circuits Lab	-	-	2	2	1	40	60	100
9	17CI61	IT Workshop	1	-	2	3	2	40	60	100
Total			15	6	8	29	22	360	540	900

B.Tech. (I Sem.)

17FE01 - PROFESSIONAL COMMUNICATION – I

L	T	P	Cr.
3	-	-	3

Pre-requisites: Basics in English Grammar & Vocabulary

Course Educational Objective:

Improve the proficiency of students in English with an emphasis on Vocabulary & Grammar for better communication in formal and informal situations; Develop listening skills required for thorough understanding and analysis to face interviews with confidence.

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

CO1 : Use English vocabulary & grammar effectively while speaking and writing.

CO2 : Comprehend the given texts and Communicate confidently in formal and informal contexts.

CO3 : Draft E-mails & Memos

CO4 : Understand the written and spoken information thoroughly.

CO5 : Face interviews with confidence.

UNIT – I

Presidential Address – Dr. A.P.J. Abdul Kalam

Vocabulary: Word formation: Prefixes, suffixes & Compound Collocations

Grammar: Punctuation; Parts of Speech

Reading: Double Angels, David Scott

Writing: Sentence structure; Paragraph writing & Dialogue writing

UNIT – II

SatyaNadella’s E-Mail to his Employees

Vocabulary: Homonyms, Homophones, Homographs (Words often confused)

Grammar: Types of verbs; Types of sentences

Reading: The Road Not Taken – Robert Frost

Writing: Letter Writing: Official Letters

UNIT – III

Technology with a Human Face – E.F.Schumacher

Vocabulary: Synonyms & Antonyms, commonly misspelt words

Grammar: Tenses: Types & Uses

Reading: Extract from ‘Preface’ to Lyrical Ballads – William Wordsworth

Writing: E-mails; Memo drafting

UNIT – IV

Listening Skills: The boy who broke the bank – Ruskin Bond; Importance of active listening; understanding the people; understanding places & events; expanding the proverbs on listening & listening at work place.

UNIT – V

Interview Skills: The lighthouse keeper of Aspinwall – Henryk Sienkiewicz; Interview skills from the story; expanding proverbs on Interview skills; Tips for attending an Interview - Covering letters for job applications & Writing a CV/Résumé

TEXT BOOKS

- 1 Board of Editors, “Fluency in English – A Course book for Engineering Students”, Orient Black Swan, Hyderabad, 2016
- 2 Dhanavel S.P, “English and Soft Skills”, Orient Black Swan, Hyderabad, 2010.

REFERENCES

1. Murphy, “English Grammar with CD”, Cambridge University Press, New Delhi, 2004.
2. Rizvi Ashraf M., “Effective Technical Communication”, Tata McGraw Hill, New Delhi, 2008
3. BaradwajKumkum, “Professional Communication”, I.K.International Publishing House Pvt.Lt., New Delhi, 2008.
4. Raman, Meenakshi and Sharma, Sangeeta, . “Technical Communication -Principles and Practice”.Third Edition. New Delhi: Oxford University Press. 2015.

B.Tech.(ISem.)

**17FE05 - DIFFERENTIAL EQUATIONS AND
NUMERICAL APPLICATIONS**

L	T	P	Cr.
3	2	-	4

Pre-requisites: Basics of Differential Calculus

Course Educational Objective :

The objective of this course is to introduce the first order and higher order differential equations, functions of several variables. They also learn the numerical techniques of solving the differential equations.

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

- CO1: Apply first order and first degree differential equations to find Orthogonal trajectories and to calculate current flow in a simple LCR circuit.
- CO2: Discriminate among the structure and procedure of solving a higher order differential equations with constant coefficients and variable coefficients.
- CO3: Developing continuous functions as an infinite series and compute the Jacobian to determine the functional dependence.
- CO4: Formation of partial differential equations and solve linear partial differential equations.
- CO5: Apply various Numerical methods in solving and initial value problem involving an ordinary differential equation.

UNIT –I**Differential Equations of First Order and First Degree**

Differential equations of first order and first degree – Exact and Non Exact Differential Equations, Applications to Orthogonal trajectories, Newton's Law of Cooling and Law of Growth and Decay.

UNIT –II**Higher Order Differential Equations**

Linear differential equations of second and higher order with constant coefficients, method of variation of parameters.

UNIT – III**Functions of Several variables**

Generalized Mean Value Theorem (without proof), Maclaurin's series, Functions of several variables, Jacobians (polar, cylindrical, spherical coordinates), Functional dependence, Maxima and Minima of functions of two variables with constraints and without constraints – Lagrangian Multiplier Method.

UNIT – IV**Partial Differential Equations.**

Formation of Partial Differential Equations by elimination of arbitrary constants and arbitrary functions. Solution of first order and first degree linear partial differential equation – Lagrange's method.

UNIT – V**Numerical solution of Ordinary Differential Equations**

Numerical solution of Ordinary Differential equations, Solution by Taylor's series - Picard's Method of successive approximations - Euler's Method - Runge- Kutta Methods.

TEXT BOOKS

1. B.S. Grewal, "*Higher Engineering Mathematics*", 42nd Edition, Khanna Publishers, New Delhi, 2012.
2. B. V. Ramana, "*Higher Engineering Mathematics*", 1st Edition, TMH Publications, New Delhi, 2010.

REFERENCE

1. M. D. Greenberg, "*Advanced Engineering Mathematics*", 2nd Edition, TMH Publications, New Delhi, 2011.
2. Erwin Krezig, "*Advanced Engineering Mathematics*", 8th Edition, John Wiley & Sons, New Delhi, 2011.
3. W. E. Boyce and R. C. DiPrima, "*Elementary Differential equations*", 7th Edition, John Wiley and sons, New Delhi, 2001.

B.Tech. (I Sem.)

17FE15 – ENGINEERING CHEMISTRY

L	T	P	Cr.
4	-	-	4

Pre-requisites: Knowledge of galvanic cell, working principle of battery, concept of polymerization, qualitative and quantitative analysis.

Course Educational Objectives :

To impart knowledge on various types of electro chemical energy systems, corrosion prevention methods and characteristics of various engineering materials.

To enable the students to obtain knowledge on photo chemical processes, liquid crystals, analytical and spectroscopic techniques of chemical analyses.

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

CO1: Analyze different types of electrodes and batteries for technological applications.

CO2: Apply the principles of corrosion in order to maintain various equipments more effectively.

CO3: Identify the importance of engineering materials like nano materials, plastics and rubbers.

CO4: Analyze various photo chemical processes & applications of liquid crystals.

CO5: Identify the importance of analytical and spectroscopic techniques in chemical analyses.

UNIT – I

ELECTRO CHEMISTRY & BATTERIES

Introduction: Electrode potential, standard reduction and oxidation potentials (S.R.P and S.O.P), E.M.F/cell potential of a cell.

Nernst equation: Derivation and problems.

Reference Electrode: Standard hydrogen electrode (S.H.E), calomel electrode, measurement of electrode potential, electro chemical series and applications.

Types of batteries: Primary, secondary and reserve batteries, dry battery (Leclanche cell), Nickel-Cadmium battery, Magnesium - Copper reserve battery.

Fuel Cells: Hydrogen- Oxygen fuel cells.

UNIT – II

SCIENCE OF CORROSION

Introduction: Definition, Examples.

Dry Corrosion (Direct Chemical corrosion): Types of dry corrosion-oxidative corrosion, Pilling Bedworth rule, corrosion by other gases and liquid metal corrosion.

Wet Corrosion (Electro Chemical corrosion): Mechanism- oxygen absorption, hydrogen evolution, types of wet corrosion, Galvanic Corrosion, Concentration Cell Corrosion, passivity and Galvanic series.

Factors Influencing Corrosion: Nature of metal (Purity, position in galvanic series, relative area of cathode & anode, nature of surface film) and nature of environment (temperature, humidity, atmospheric pollution and nature of ions in the medium).

Control of Corrosion: Cathodic Protection - Sacrificial anode and impressed current methods, electro plating and metal cladding.

UNIT – III

CHEMISTRY OF ENGINEERING MATERIALS

Nano Materials: Introduction, definition, properties (optical, electrical, mechanical magnetic) preparation of nano materials-sol-gel method and applications of nano materials.

Polymers: Definition, basic terminology, differences between thermosets & thermoplasts, types of polymerization (addition, condensation and copolymerisation), preparation, properties and engineering applications of bakelite and PMMA, conducting polymers- extrinsic, intrinsic conducting polymers and fiber reinforced plastics (FRP).

Rubbers: Definition, processing of natural rubber and drawbacks, vulcanization - advantages, preparation, properties and applications of BUNA-S and thiokol.

UNIT – IV

PHOTO CHEMISTRY & LIQUID CRYSTALS

Introduction: Definition, differences between thermal and photo chemical reactions.

Laws of Photo Chemistry: Groth's-Droper law, Stark-Einstein law and quantum efficiency (Definition only).

Photo Physical processes: Fluorescence, phosphorescence – applications, chemiluminescence, bio-luminescence and Photo-sensitization.

Liquid crystals: Definition, identification and structural aspects of molecules to form liquid crystals.

Classification of liquid crystals: Thermo tropic liquid crystals and types, lyotropic liquid crystals and applications.

UNIT – V

ANALYTICAL TECHNIQUES

Introduction: Types of analysis.

Physical analysis: Analysis of physical characteristics.

Chemical analysis: Gravimetric and volumetric analysis (basic concept only).

Instrumental analysis: Electro analytical techniques – Introduction.

Conductometric techniques: strong acid -strong base and strong acid-weak base, weak acid - strong base and weak acid -weak base – advantages.

Potentiometric techniques: Acid-base and oxidation-reduction titrations-advantages.

Colorimetric techniques: Principle and determination of iron by using thiocyanate as a reagent.

SPECTROSCOPY

Introduction: Origin of electronic spectra, types of spectra-emission and absorption spectra and Beer-Lambert's law.

IR-Spectroscopy: Types of vibrations, factors influencing vibrational frequencies and applications of IR-Spectroscopy.

UV-Spectroscopy: Types of electronic transitions, probability, Chromophores, Auxochromes and applications of UV-Spectroscopy.

TEXT BOOKS

1. Shikha Agarwal, "A Text book of Engineering Chemistry", Cambridge University Press, New Delhi, 1st Edition, 2015.
2. Jain, Jain, "A textbook of Engineering Chemistry", Dhanpat Rai Publishing Company, New Delhi, 16th Edition, 2015.

REFERENCES

1. Shashi Chawla, "A Text book of Engineering Chemistry", Dhanpat Rai Publishing Company, New Delhi, 3rd Edition, 2003.
2. S.S. Dara, S.S. Umare, "A Text book of Engineering Chemistry", S.Chand Publications, New Delhi, 12th Edition, 2010.
3. Y. Bharathi Kumari and Jyotsna Cherukuri, "A Text book of Engineering Chemistry", VGS Publications, Vijayawada, 1st Edition, 2009.

B.Tech. (I Sem.)

17CI01 - COMPUTER PROGRAMMING

L	T	P	Cr.
2	2	-	3

Pre-requisites : NIL

Course Educational Objective: In this course student will learn about The basic elements C programming structures like data types, expressions, control statements, various I/O functions and how to solve simple mathematical problems using control structures. The derived data types like arrays, strings, various operations on them. Modular programming using functions and Memory management using pointers. User defined structures and various operations on it. The basics of files and its I/O operations.

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

- CO1:** Identify basic elements of C programming structures like data types, expressions, control statements, various simple functions and in view of using them in problem solving.
- CO2:** Apply various operations on derived data types like arrays and strings in problem solving.
- CO3:** Design and Implement Modular Programming and memory management using pointers.
- CO4:** Implement user defined data structures used in specific applications.
- CO5:** Compare different file I/O operations on text and binary files.

UNIT – I

Introduction to Problem solving through C-Programming: Problem Specification. Algorithm / pseudo code, flowchart, examples.

C-Programming: Structure of C program, identifiers, basic data types and sizes, Constants, variables, Input-output statements, A sample c program, operators: arithmetic, relational and logical operators, increment and decrement operators, conditional operator, bit-wise operators, assignment operators, expressions, type conversions, conditional expressions, precedence of operators and order of evaluation. **Conditional statements:** if, if else, else if ladder and switch statements, continue, go to and labels. Loops: while, do-while and for statements, break, programming examples.

UNIT – II

Arrays- one dimensional arrays-concept, declaration, definition, accessing elements, storing elements, two dimensional and multi-dimensional arrays. **Character Strings:** declaration, initialization, reading, writing strings, arithmetic operations on characters, string handling functions programming examples

UNIT – III

Functions: basics, category of functions, parameter passing techniques, recursive functions-comparison with Iteration, Functions with arrays, storage classes- extern, auto, and register, static, scope rules, Standard library functions., dynamic memory management functions, command line arguments, c program examples.

Pointers- concepts, declaring & initialization of pointer variables, pointer expressions, address arithmetic, pointers and arrays, pointers and character strings, pointers to pointers, Pre-processor Directives and macros.

UNIT –IV

Derived types- structures- declaration, definition and initialization of structures, accessing structures, nested structures, arrays of structures, structures and functions, pointers to structures, self-referential structures, unions, typedef, C program examples.

UNIT – V

Files – concept of a file, text files and binary files, streams, standard I/O, Formatted I/O, file I/O operations, error handling, and C program examples.

TEXT BOOKS

Jeri R.Hanly, Elliot B.Koffman, Problem Solving and Program Design in C, Pearson Publishers, 7th Edition, 2013

REFERENCE

1. N.B.Venkateswarlu and E.V.Prasad, C and Data Structures, S.Chand Publishing, 1st Edition, 2010,
2. ReemaThareja, Programming in C, Oxford University Press, 2nd Edition, 2015
3. Stephen G.Kochan, Programming in C, Pearson Education, 3rd Edition, 2005
4. PradeepDey, Manas Ghosh, Programming in C, Oxford University Press, 2nd Edition, 2011
5. E Balagurusamy, Computer Programming, McGraw Hill Education, 1st Edition

		L	T	P	Cr.
B.Tech. (I-Sem.)	17EC02 – ELECTRONIC DEVICES AND CIRCUITS	2	2	-	3

Pre-requisites : Fundamentals of Physics.

Course Educational Objective:

This course gives an overview of carrier transport phenomena in semiconductor and introduces the characteristics and applications of semiconductor devices like p-n junction diode, Bipolar Junction Transistor (BJT), Field Effect Transistor (FET), Metal oxide Semiconductor Field Effect Transistor (MOSFET) and various special devices. Emphasis is placed on analysis, selection and proper biasing of transistors like BJT and FET.

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

- CO1 **Recognize** the transport phenomena of charge carriers in a semiconductor.
- CO2 **Analyze** the different types of diodes, operation and its characteristics.
- CO3 **Apply** different types of filters in AC to DC conversion.
- CO4 **Describe** Bipolar Junction Transistors and Field Effect Transistors.
- CO5 **Analyze** the different biasing techniques used in BJTs and FETs.

UNIT – I

Semiconductor Physics: The Energy band theory of crystals, Insulators, Semiconductors and Metals; Mobility and Conductivity, Energy distribution of electrons, Electrons and Holes in an Intrinsic Semiconductor, Conductivity of a semiconductor, Carrier concentrations in an intrinsic Semiconductor, Donor and Acceptor Impurities, Mass Action Law, Charge densities in a semiconductor with impurities, Fermi level in a semiconductor having impurities, Diffusion; Carrier Lifetime, Generation and recombination of charge carriers, Continuity Equation and Hall Effect.

UNIT – II

Semiconductor Diode Characteristic: Qualitative theory of the p-n Junction, The p-n junction as a diode; Band Structure of an open circuited p-n Junction, The Current components in a p-n Diode, Qualitative theory of the p-n diode currents, The Volt- Ampere Characteristic, The Temperature dependence of P-n characteristics, Diode Resistance, Diode Capacitance- Transition Capacitance and Diffusion Capacitance.

Special Diodes: Operation and characteristics of Zener Diode, Tunnel Diode, Varactor Diode, Photo Diode, PIN diode, Avalanche photo diode, LASER, LED, Liquid crystal diode and Solar cell.

UNIT – III

Rectifiers: Half Wave Rectifier, Full Wave Rectifier with center tap transformer and Bridge circuit - Derivation for DC, RMS Currents and Voltages, Ripple Factor, Rectifier Efficiency, Peak Inverse Voltage, Transformer Utilization Factor and Percentage of regulation; Comparison of Rectifiers; Harmonic components in a Rectifier circuit.

Filters: Inductor Filter, Capacitor Filter, L-Section Filter, π -Section Filter, Multiple L-Section and π -Section Filters.

Regulators: Voltage Regulation using Zener diode and its design, series and shunt voltage regulators.

UNIT – IV

Bipolar Junction Transistor (BJT): Introduction to Three terminal Devices, BJT-construction , types and different regions of operations, Transistor (BJT) as an amplifier, Transistor Current components-Emitter Efficiency, Transport Factor, Large Signal Current Gain, Input and Output characteristics of Transistor in Common Base, Common Emitter and Common Collector configurations, Relation between α , β and γ , Base Width modulation, Ebers-Moll Model.

Field Effect Transistors (FET): Comparison between FET and BJT, classification of FET; Construction, Operation, Drain and Transfer Characteristics of JFET and MOSFET, MOS capacitor.

Optical and Power Electronic Devices: Operation and characteristics of Photo Transistor, Silicon Controlled Rectifier, and Uni-Junction Transistor (UJT).

UNIT – V

BJT Biasing: Need for biasing; Transistor Biasing and Stability- Operating Point, DC load line, AC load line and Stability factors S , S' and S'' , Different biasing circuits- Fixed Bias, Collector to Base Bias and Self Bias with and without emitter resistance, Thermal Runaway and Thermal Stability- Condition to avoid Thermal Runaway, Bias Compensation Techniques- Diode Compensation for V_{BE} , Diode Compensation for I_{CO} , thermistor and sensistor compensation.

FET Biasing: Different FET biasing methods - Fixed bias, self bias and voltage divider bias.

TEXT BOOKS

1. Jacob Millman, Christos C Halkias, “Electronic Devices and Circuits”, Tata McGraw Hill, Publishers, New Delhi.
2. Ben Streetman and Sanjay Banerjee , “Solid State Electronic Devices”, Prentice Hall

REFERENCES

1. Thomas L.Floyd, Electronic Devices, Pearson Education Publishers.
2. Allen Mottershed, “Electronic Devices and Circuits”, PHI Publishers.
3. R.L. Boylestad and Louis Nashelsky, Electronic Devices and Circuits, Pearson/Prentice Hall Publishers.

B.Tech. (I Sem.)

17FE65 – ENGINEERING CHEMISTRY LAB

L	T	P	Cr.
-	-	2	1

Pre-requisites : Knowledge of volumetric titration.

Course Educational Objectives:

To impart the ability to analyze water for its quality and to determine the important parameters like alkalinity and to distinguish types of titrations in volumetric analysis. To gain hands on experience in the preparation of polymers and to perform experiments based on theoretical fundamentals.

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

CO1 : Assess alkalinity of water based on the procedure given.

CO2 : Distinguish different types of titrations in volumetric analysis after performing the experiments listed in the syllabus.

CO3 : Acquire practical knowledge related to preparation of polymers.

CO4 : Exhibit skills in performing experiments based on theoretical fundamentals.

Introduction

1. Introduction to Chemistry laboratory – Molarity, Normality, Primary, secondary standard solutions, Volumetric titrations, Quantitative analysis, Qualitative analysis, etc.
2. Preparation of standard solutions, concept of standardisation, dilution to get solution of required normality.
3. Model experiment - Determination of HCl using standard Na_2CO_3 solution.

Water analysis

4. Determination of alkalinity of water sample.

Complexometric titrations

5. Estimation of $\text{Mg}^{+2}/\text{Zn}^{+2}/\text{Ca}^{+2}$ in given solution by using standard EDTA solution.

Preparation of polymers

6. Preparation of Urea formaldehyde resin.
7. Preparation of Phenol formaldehyde resin.

Redox titrations

8. Estimation of Mohr's salt by using potassium permanganate.
9. Estimation of Mohr's salt by using potassium dichromate.
10. Estimation of KMnO_4 by using oxalic acid.

Conductometric measurements

11. Estimation of amount of HCl conductometrically using standard NaOH solution.
12. Estimation of amount of HCl conductometrically using NH_4OH solution .

Potentiometric measurements

13. Estimation of amount of HCl potentiometrically using NaOH solution.
14. Estimation of amount of Fe^{+2} potentiometrically using $\text{KMnO}_4 / \text{K}_2\text{Cr}_2\text{O}_7$ solution.

Demonstration Experiments

15. Determination of pH of the given sample solution using pH meter.
16. Determination of turbidity of the given sample water.

Colorimetric Analysis

17. Determination of Iron by a Colorimetric method using thiocyanate as a reagent.

REFERENCES

Lab manual

B.Tech. (I Sem.)

17CI60 - COMPUTER PROGRAMMING LAB

L	T	P	Cr.
		2	1

Pre-requisites : NIL

Course Educational Objective: In this course student will learn about Software development tools like algorithm, Pseudo codes and programming structure. Basic elements C programming structures like data types, expressions, Control statements, various I/O functions and how to solve simple mathematical Problems using control structures. Design and implementation of various software components which solve real world problems.

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

CO1: Apply and practice logical formulations to solve some simple problems leading to specific applications.

CO2: Demonstrate C programming development environment, compiling, debugging, linking and executing a program using the development environment.

CO3: Design effectively the required programming components that efficiently solve computing problems in real world.

Mandatory: All Programs must have Algorithms and Flow Charts

LAB CYCLE SYLLABUS

I) Exercise Programs on Basics of C-Program

Write a program in 'C' language to cover the following problems.

- a) Example program which shows the usage of various preliminary Data types available in C Language.
- b) Example program which shows the usage of various Operators available in C Language.
- c) Example programs to illustrate the *order of evaluation*.

II) Exercise Programs on Control Structures:

- a) To check whether the given year is leap year (or) not
- b) Roots of Quadratic Equation.
- c) Finding smallest & biggest number from the given set of 4 numbers using 'if' statement.
- d) Calculate the student grade in the examination – assume suitable Constraints.
- e) Prepare electricity bill for the consumed units – assume suitable Constraints.
- f) Converting given two digit number into words using switch statement
- g) To illustrate the usage of 'goto' statement.

III) Exercise Programs on Loops:

- a) To Display first N natural numbers
- b) To find whether the given number is Armstrong (or) not
- c) To find reverse of the given number and to check whether it is palindrome (or) not.
- d) To find whether given number is strong number (or) not.
- e) To check whether given number is Prime (or) not
- f) To display prime numbers with in the given range (Nesting of Loops).
- g) To display the following structure (Nesting of Loops)

i)
$$\begin{array}{cccccc} & & & & & 1 \\ & & & & & 1 & 2 \\ & & & & 1 & 2 & 3 \\ & & 1 & 2 & 3 & 4 \\ 1 & 2 & 3 & 4 & 5 \end{array}$$

ii)
$$\begin{array}{ccccc} 5 & 4 & 3 & 2 & 1 \\ 4 & 3 & 2 & 1 & \\ 3 & 2 & 1 & & \\ 2 & 1 & & & \\ 1 & & & & \end{array}$$

IV) Exercise Programs on Arrays & Strings:

Write example programs in C Language to perform following operations:

- Finding the sum and average of given numbers using Arrays.
- To display elements of array in reverse order
- To search whether the given element is in the array (or) not using linear search & binary search.
- Write a C program to perform the following operations
 - Addition, subtraction and multiplication of Matrices
 - Transpose of given matrix
 (The above operations are to be exercised using functions also bypassing arguments)
- Write a C program to find whether the given string is palindrome (or) not.
- To accept line of text and find the number of characters, number of vowels and number of blank spaces in it.
- Write an example program to illustrate the use of any 5 string handling functions.

V) Exercise Programs on Functions & Pointers:

- Example program to bring clarity on pointer declaration & initialization and Pointer arithmetic.
- Write an example program to describe the usage of *call by reference*.
- Write a program to find sum of the elements of the array using functions.

VI) Exercise Programs on Functions:

Write example programs in C Language:

- To find factorial of a given number using functions.
- Swap two numbers using functions.
- To find GCD of two numbers using recursion
- Write a recursive function to solve Towers of Hanoi problem.
- Write an example program to illustrate use of external & static storage classes.
- Write an example program to illustrate the usage of command line arguments.
- Program to illustrate the usage of dynamic memory management functions.

VII) Exercise Programs on Derived data types:

- Write an example program using structures to process the student record. Assume suitable fields for student structures (Different kinds of initialization of structure variables are to be exercised)
- Write a program to read records of 10 employees and find their average salary (Exercise array of structures & Nested structures concepts through this program).
- Write a program to handle a structure variable using pointers and implement self referential structure (i.e. A structure variable having a pointer to itself)

VIII) Exercise Programs on Files:

Write an example program on file to perform following operations:

- Accessing content from files and writing content in to it.
(Exercise different file operation modes)

		L	T	P	Cr.
B.Tech. (I-Sem.)	17EC61 – ELECTRONIC DEVICES AND CIRCUITS LAB	-	-	2	1

Course Educational Objective : This course gives an overview of operation of basic Electronics lab equipments like CRO and Function generator, calculation basic semiconductor device parameters from their characteristics and application of p-n junction diode in rectifier circuits.

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

- CO1 **Operate** Function generator and CRO to Generate and Measure the voltage, frequency and phase of any waveform.
- CO2 **Analyze** the characteristics of different electronic devices such as Diodes and Transistors.
- CO3 **Operate** simple circuits like Rectifiers.

List of Experiments

(The following experiments are to be simulated using PSPICE/MULTISIM/LABVIEW Software and verified by Bread board)
(Minimum 12 experiments to be conducted)

1. Study of basic lab equipments, CRO and Function generator.
2. PN Junction diode Characteristics.
3. Zener diode Characteristics.
4. Transistor Characteristics under CB Configuration.
5. Transistor Characteristics under CE Configuration.
6. Transistor Characteristics under CC Configuration.
7. Drain Characteristics of Field Effect Transistor.
8. Transfer Characteristics of Field Effect Transistor.
9. Uni-Junction Transistor Characteristics.
10. Half wave rectifier with and without inductive filter.
11. Half wave rectifier with and without capacitive filter.
12. Full wave rectifier with and without inductive filter.
13. Full wave rectifier with and without capacitive filter.

B.Tech. (I Sem.)

17CI61 - IT WORKSHOP

L	T	P	Cr.
1	-	2	2

Pre-Requisites: The students should have knowledge in computer usage.

Course Educational Objective : After completing this course, students will be able to Identify the basic peripherals, understand the process of assembling a personal computer and installation of system software like MS Windows, Create professional word documents using LaTeX, excel spread sheets and power point presentations and work with visual programming development environment based on flowcharts. Using RAPTOR Interpreter

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

- CO1 : Develop skill in S/W and H/W trouble shooting, and solve the problems of assembling and OS installation.
 CO2 : develop skill in using office suite.
 CO3 : develop skill in using tools like RAPTOR, LaTeX and adobe Photoshop.

Week 1 PC Hardware

Task: 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.

Week 2

Task: 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.

Week 3

Task 1: Every student should individually install MS windows on the personal computer. Lab instructor should verify the installation and follow it up with a Viva.

Week 4

Task 1: Word Orientation: The mentor needs to give an overview Microsoft word: Importance of word tool, Details of toolbars, saving files, Using help and resources, rulers.

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

Week 5

Task: 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 and Paragraphs.

Week 6

Task 1: Introduction to LaTeX – A document preparation system.

Task 2: Using LaTeX to create project certificate.

Features to be covered:- Formatting Fonts, Applying Text Effects, Using Character Spacing, Borders and Colors, Inserting Header and Footer, Using Date and Time option, Formatting

Styles, Inserting table, Bullets and Numbering, Changing Text Direction, Cell alignment, Footnote, Hyperlink, Symbols, Spell Check, Track Changes, etc.,

Week 7

Task 1: Excel Orientation: The mentor needs to tell the importance of MS 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 2: To create student progress report - Features to be covered: - Cell Referencing, Formulae in excel - average, Charts, Split cells, Sorting, Boolean and logical operators, Conditional formatting.

Week 8

Task: Create cricket score card in excel to display over rate and run rate graphs. Features to be covered: - Cell Referencing, Formulae in excel - average, Charts, Split cells, Sorting, Boolean and logical operators, Conditional formatting.

Week 9

Task1: power point Orientation Students will be working on basic utilities and tools which help them create basic power point presentation. Topic covered during this week includes:- PPT Orientation, Slide Layouts, Inserting Text, Word Art, Formatting Text, Bullets and Numbering, Lines and Arrows in Power point.

Task 2: create a power point presentation for LBRCE Topic covered during this task includes: Hyperlinks, Inserting -Images, Clip Art, Audio, Video, Objects, Tables and Charts.

Week 10

Photo shop Orientation Students will be working on Basic utilities and tools which help them to edit a photograph. Topic Covered during this week includes: - Details of toolbars, saving files, Using help and resources.

Week 11

Task 1: The mentor needs to tell the importance of RAPTOR as a Flowchart Interpreter tool, give the details of the visual programming development environment based on flowcharts. Topics to be covered:-RAPTOR Program Structure, RAPTOR Statements/Symbols, RAPTOR Variables.

Task 2: Student needs to practice Examples of raptor flowchart interpreter

- i) Raptor Flowchart to Find a Number is Even or Odd.
- ii) Raptor Flow Chart to Calculate Grade of a Student.

Week 12

Tips and tricks. Keyboard shortcuts, taskbar, screen shot, taking advantage of search, Task Manager, Power option, schedule tasks, user accounts, disk management, device manager, shared folders and folder options.

REFERENCES

1. Comdex Information Technology course tool kit Vikas Gupta, WILEY Dreamtech.
2. Introduction to Information Technology, IITL Education Solutions limited, Pearson Education.
3. PC Hardware and A+Handbook - Kate J. Chase PHI (Microsoft).
4. Raptor Research and Management Techniques, David M. (David Michael), 1949/HANCOCK HOUSE PUBLISHERS LTD.
5. LaTeX Companion - Leslie Lamport, PHI/Pearson.