COURSE STRUCTURE
AND
DETAILED SYLLABUS

COMPUTER SCIENCE AND ENGINEERING
(DATA SCIENCE)

For
B.TECH FOUR YEAR DEGREE PROGRAMME
(Applicable for the batches admitted from 2020-2021)

VAAGDEVI COLLEGE OF ENGINEERING
(Autonomous)
Bollikunta, Warangal-506 005
Telangana State, India.

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

COMPUTER SCIENCE AND ENGINEERING
(DATA SCIENCE)

COURSE STRUCTURE
(R20 Regulations applicable for the batches admitted from Academic Year 2020-2021)

I - SEMESTER

S. No.	Course Code	Title of the Course	L	T	P	Credits
1	B20MA01	Linear Algebra and Calculus	3	1	0	4
2	B20PH01	Modern Physics	3	0	0	3
3	B20EE01	Basic Electrical and Electronics Engineering	3	0	0	3
4	B20CS01	Programming for Problem Solving	4	0	0	4
5	B20ME01	Engineering Drawing	0	0	4	2
6	B20PH05	Physics Lab	0	0	3	1.5
7	B20CS02	Programming for Problem Solving Lab	0	0	3	1.5
8	B20MC01	Induction Program	-	-	-	0
		Total Credits	**13**	**1**	**10**	**19**

II SEMESTER

S. No	Course Code	Title of the Course	L	T	P	Credits
1	B20MA02	Differential Equations and Vector Calculus	3	1	0	4
2	B20CH04	Modern Chemistry	3	0	0	3
3	B20CS04	Data Structures and Algorithms	4	0	0	4
4	B20CS03	Python Programming	4	0	0	4
5	B20CS08	Data Structures and Algorithms Lab	0	0	3	1.5
6	B20CS07	Python Programming Lab	0	0	3	1.5
7	B20EN02	English Language and Interactive Communication Skills Lab	0	0	3	1.5
8	B20ME03	Engineering & IT Workshop Lab	0	0	3	1.5
9	B20MC02	Sports	2	0	0	0
		Total Credits	**16**	**1**	**12**	**21**

(AUTONOMOUS)

LINEAR ALGEBRA AND CALCULUS

B. TECH- I Semester **L/T/P/C**
3/1 /0 /4

Pre-requisites: Mathematical Knowledge at pre-university level

Course Objectives:

To learn

- Concept of rank of matrix and apply to know the consistency of system of linear equations.
- To determine Eigen values, Eigen vectors of matrices.
- Analyse the nature of sequence and series.
- Geometrical approach to the mean value theorems and their applications.
- To find extreme value of function of two and three variables.

UNIT-I

Matrices

Types of Matrices: Symmetric, Skew-symmetric, Hermitian, Skew-Hermitian, orthogonal, Unitary matrices, Rank of a matrix by Echelon form and Normal form, System of linear equations: Solving system of Homogeneous and Non-Homogeneous equations.

UNIT-II

Eigen Values and Eigen vectors

Linear Transformation and Orthogonal Transformation: Eigen values and Eigen vectors and their properties: Diagonalization of a matrix; Cayley-Hamilton Theorem (without proof); finding inverse and power of a matrix by Cayley-Hamilton Theorem;

UNIT-III

Sequences and Series

Definitions, limit, Convergent, Divergent and Oscillatory sequences and Series. Comparison test, p-test, D-Alembert's ratio test; Cauchy's Integral test; Cauchy's n^{th} root test. Alternating series: Leibnitz test,Absolute and Conditionally Convergence.

UNIT-IV

Calculus

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-V

Multivariable calculus (Partial Differentiation and applications)

Definitions of Limit and continuity. Partial Differentiation; Total derivative; Jacobian; Functional dependence and independence, Maxima and Minima of functions of two and three variables using method of Lagrange's method of undetermined multipliers.

COURSE OUTCOMES:

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

CO-1: Understand the principles of matrix to calculate the characteristics of system of linear equations using multiple methods.

CO-2: Determine Eigen values, Eigenvectors of matrices.

CO-3: Analyse the nature of sequence and series to identify the convergence.

CO-4: Evaluate limits of single-variable functions graphically and computationally. Analyse improper integrals using Beta and Gamma functions.

CO-5: Calculate Partial derivatives, extreme of functions of multiple variables.

TEXT BOOKS:

1. B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 42nd Edition, 2012.
2. Erwin kreyszig, Advanced Engineering Mathematics, 9th Edition, John wiley& Sons, 2006.
3. T.K.V. Iyengar, Engineering Mathematics-I, S. Chand, 2018.

REFERENCE BOOKS:

1. G.B. Thomas and R.L. Finney, Calculus and Analytic geometry, 9th Edition, Pearson, Reprint, 2002.
2. N.P. Bali and Manish Goyal, A text book of Engineering Mathematics, Laxmi Publications, Reprint, 2008.
3. Ramana B.V., Higher Engineering Mathematics, Tata McGraw Hill New Delhi, 11th Reprint, 2010.

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VAAGDEVI COLLEGE OF ENGINEERING
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MODERN PHYSICS

B. TECH- I Semester **L/T/P/C**
3/0 /0 /3

Pre-requisites: None

Course Objectives:

The course will develop students' knowledge in/on

- Concepts of Quantum mechanics their applications
- Concepts and working principles of lasers and optical fibres
- Concepts of Wave optics and Semiconductors in detail
- The course aims at making students to understand the basic concepts of Principles of Physics in a broader sense with a view to lay foundation for the various engineering courses.
- Various chapters establish a strong foundation on the different kinds of materials and pave a way for them to use in at various technical and engineering applications.

UNIT I: Quantum Mechanics

Introduction to Quantum mechanics, Wave nature of Particles, de-Broglie's hypothesis, Time- Independent Schrodinger equation, Significance of Wave function, Uncertainty principle, Particle in one dimension box.

UNIT II: Wave Optics

Huygens's principle, superposition of waves and interference of light by wave front splitting and amplitude splitting; Thin film interference, Newton's rings.

Farunhofer diffraction from a single slit and circular aperture, Diffraction gratings and their resolving power.

UNIT III: Lasers

Characteristics of lasers, absorption, spontaneous emission, stimulated emission. Einstein's theory of matter radiation interaction and A and B Coefficients; amplification of light by population inversion, Ruby laser, He-Ne laser, CO2 laser and semiconductor diode laser, applications of lasers in science, Engineering and Medicine.

UNIT IV: Physics of Semiconductors and devices

Classification of materials: conductors, semi- conductors and insulators, calculation of carrier concentration in intrinsic and extrinsic (N-type) semiconductors, Direct and indirect band gap semiconductors. Energy diagram of P-N diode, LED, Types of semiconductor photodetectors, working principles and characteristics of PIN diode, Solar Cell.

UNIT V: Optical Fibres

Optical Fibres introduction, Total internal reflection, Acceptance angle and Cone, Numerical aperture, Types of Optical Fibres, step and graded index fibres, losses in optical fibres, applications of optical fibres.

COURSE OUTCOMES:

On successful completion of this course, students are able to:

- **CO-1:** Understands the basic concepts and hypothesis of quantum mechanics
- **CO-2:** Describes the characteristics and working of lasers and their use in various fields.
- **CO-3:** Analyze and apply the concepts of wave optics for accurate determination of the interference in thin films, Newton's rings and the diffraction in single slit etc.
- **CO-4:** Classify the materials on the basis of energy band gap, and evaluates the carrier concentration of given semiconductors for device applications
- **CO-5:** Apply the concepts of the light propagation in optical fibres in optical communication systems

TEXT BOOKS:

1. A Text Book of Engineering Physics, Dr. M.N. Avadhanulu, Dr. P.G. Kshrisagar-S.Chand.
2. Modern Engineering Physics (Vol-I & II), Dr. K. Vijaya Kumar, Dr. S. Chandralingam – S.Chand.
3. Engineering Physics, P.K. PalaniSwamy, Scitech Publications.
4. Electric Devices & Circuits – Millman & Halkies.

REFERENCES BOOKS:

1. Haliday and Resnick, Physics-Wiley
2. J. Singh Semiconductor Optoelectronics: Physics and Technology, Mc. Graw-Hill inc(1995).

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

B. TECH- I Semester **L/T/P/C**
3/0 /0 /3

Pre-requisites: None

Course objectives:

In this course it is aimed to introduce

- The basic concepts of electrical circuits which is the foundation for network theory
- To understand about single phase AC circuits.
- To understand functioning of different types of DC machines and transformers.
- To understand the various operations of transistors and special purpose diodes
- To learn basic concepts of diodes, Rectifiers and filters.

UNIT-I

Electrical Circuits: Circuits concept, R-L-C Parameters, Voltage and Current sources, Source Transformation, V–I relationship for Passive elements, Kirchoff's Laws, Network reduction techniques – series, parallel, series parallel, star-delta & star-delta transformations, Nodal Analysis, Mesh analysis with DC excitations. Network Theorems - Thevenin's, Norton's, Maximum Power Transfer, Superposition, Reciprocity Theorems with DC excitation Calculation of Power (VI)

UNIT-II

Single Phase AC Circuits - R.M.S. and Average values, Form Factor, steady state analysis of series, Parallel and Series parallel Combinations of R, L and C with Sinusoidal excitation concept of reactance, Impedance, Susceptance and Admittance –Concept of Power Factor.

UNIT-III

Transformers and DC Machines:: D.C. Machines: Constructional features, Methods of Excitation, E.M.F. Equation and Applications, Torque development in D.C motor Characteristics of DC motors, losses, Efficiency, Speed control of DC Shunt motors Role of Transformers in the fields of engineering, Transformer principle, Ideal and Practical Transformers Equivalent circuit, Regulation and Efficiency.

UNIT-IV

P-N Junction Diode - Diode equation, V-I characteristic, Temperature dependence, Bipolar Junction Transistor (BJT) - Construction, Principle of Operation, CB,CE and CC configurations, Zener Diode, Zener diode characteristics, Use of Zener diode as simple regulator.

UNIT-V

Operational amplifier basics, op amp inverting and Non-Inverting amplifier, Rectifiers and Filters - The P-N junction as a rectifier - A Half Wave Rectifier, Bridge Rectifier, Filters –Inductor Filters, Capacitor Filters.

Course Outcomes:

After Completion of the course, the students will be able to

CO-1: Analyze circuit theorems, mesh and nodal analysis, series and parallel networks, Electrical power.

CO-2: Gain knowledge on AC circuits, reactance, Impedance, Susceptance and Admittance and Power Factor

CO-3: Learn the working principle of DC motors, Transformers

CO-4: Study the characteristics of PN Junction diode and zener diode

CO-5: Learn the basic of Amplifiers and Rectifiers.

TEXT BOOKS:

1. Circuit Theory Analysis and Synthesis by A Chakrabarti, Dhanpat rai & co.
2. Basic Electrical Engineering, P Ramana, M. Suryakalavathi, G. T. Chandra Sekhar,1st Edition, S. Chand Technical Publications, 2018
3. Electronic Devices and Circuits, S. Salivahanan and N Suresh Kumar, 3rd Edition TMH, Revised 2019

REFERENCE BOOKS:

1. Network Analysis by M.E Van Valkenburg, Pearson Publications 3rd Edition
2. Principles of electrical machines by V K Mehta, S Chand Publications
3. Electronics devices and circuits by I J NagrathPHI Publications

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VAAGDEVI COLLEGE OF ENGINEERING
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PROGRAMMING FOR PROBLEM SOLVING

B. TECH- I Semester **L/T/P/C**
4/0 /0 /4

Pre-requisites: None

Course Objectives:

- To provide the necessary knowledge on general engineering problem solving methodologies.
- To provide necessary foundations for step by step computer program development and to present the basic concepts in C programming language.
- To prepare the students to write modular and readable C Programs.
- The Course introduces the essential concepts like abstract data types, user defined data types.
- To analyze the performance of algorithms and how to use such knowledge for later processing with the help of files.
- Aims to train the students to write working programs to solve problems.

UNIT -I

Introduction: Steps in Problem Solving, Algorithms, Flowcharts, Pseudo code, Types of Programming Languages, Introduction to C, History of C, Structure of a C Program.

Introduction to C Programming: The C Character Set, Identifiers and - Keywords, Data Types, Constants and Variables, Declarations, Expressions & Statements, Input / Output Statements (Formatted and Unformatted), Creating and Running a C program.

Operators and Expressions : Unary Operators, Arithmetic Operators, Relational and Logical Operators, Assignment Operators, Conditional operator, Bitwise Operators, special operators, Precedence & Associativity, Type Casting and Type Conversion.

UNIT – II

Control Statements: Branching Statements – if, if-else, else- if, nested-if. Switch statement. Un - conditional Branching Statement- goto. Looping Statements- while, do-while, for, nested loops. Break & Continue.

Functions : Introduction, Defining a Function, Types of Functions, Accessing a Function, Function Prototypes, Passing Arguments to a Function – call by value, Recursion.

Storage Classes: Automatic Variables, External (Global) Variables, Static Variables, Register.

UNIT – III

Arrays: Definition - Single Dimensional Arrays, Multi Dimensional Arrays, Declaration, Initialization, Reading & Writing elements in to an Array, Passing Arrays to Functions. Linear Search, Binary search, Bubble sort.

Strings: Declaration and Initialization of Strings, Reading and Writing a String, String Manipulation Functions, String as Array of Characters, Array of strings, Sorting of Strings.

Structures and Unions: User-Defined Data Types , Defining a Structure, Processing a Structure, Array of Structures, Nested Structures, Passing Structures To Functions. Unions. Typedef, Enumerated types - enum.

UNIT – IV

Pointers: Introduction, Pointer Declarations, Pointer to Pointer, Operations on Pointers -Pointer Arithmetic, Dynamic Memory Allocation – Malloc(), Calloc(), Realloc(), Free(). Pointers and Functions - call by Reference, Pointers and Arrays (one dimensional, two dimensional), Array of Pointers. Structures and Pointers, Self-Referential Structures.

UNIT- V

File Handling: Introduction, Text Files and Binary Files, File Handling Functions-Opening and Closing a File, File Opening Modes, Reading and Writing a File. Random Access File Functions –

fseek() , rewind(), ftell(). Command Line Arguments, C Preprocessor Directives.

Course Outcomes:

- **CO-1:** Understanding how problems are posed and how they can be analyzed for obtaining solutions.
- **CO-2:** Learning of sequencing, branching, looping and decision making statements to solve scientific and engineering problems.
- **CO-3:** Implementing different operations on arrays and creating and using of functions to solve problems.
- **CO-4:** Understanding and exploring the various methods of memory allocations.
- **CO-5:** Ability to design and implement different types of file structures using standard methodology.

TEXT BOOK:

1. Byron Gottfried, ***"Programming with C"*** . Third Edition (Schaum's Outlines) McGraw Hill.

REFERENCE BOOKS:

1. B.A. Forouzan and R.F. Gilberg , *"C Programming and Data Structures"* , Cengage Learning (3rd Edition)
2. Pradip Dey & Manas Ghosh, *"Programming in C"*, 2nd Edition , Oxford University Press,2013.
3. E. Balaguruswamy , *"Programming in ANSI C "* ,McGraw-Hill Education, 2008.

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

ENGINEERING DRAWING

B. TECH- I Semester **L/T/P/C**
0/0 /4 /2

Pre-requisites: None

Course Objectives:

- Use of various command, object properties in AUTOCAD.
- Learn the basic convention of drawings, dimensioning, scales and conic sections like ellipse, parabola and hyperbola.
- Learn projection of points, lines viewed in different positions.
- Learn projections of plane surfaces and solids viewed in different positions.
- Gain knowledge of sections of solids and their usage in real time applications and conversion of orthographic projection to isometric projection vice-versa.

UNIT – I

Chapter-I Introduction to Computer Graphics : Listing the computer technologies that impact on graphical communication, Demonstrating knowledge of the theory of CAD software -The Menu System, Toolbars Standard, Object Properties, Draw, Modify and Dimension.

Chapter-II Introduction to Engineering Drawing:

Principles of Engineering Graphics and their significance, ISO and ANSI standards for coordinate dimensioning- usage of Drawing instruments, lettering

a. Conic sections including the Rectangular Hyperbola (General method only);
b. Roulettes-Cycloid, Epicycloid, Hypocycloid
c. Involute
d. Scales – Plain, Diagonal and Vernier Scales.

UNIT –II

Principles of Orthographic Projections in First Angle Projection- Conventions

Projections of Points

Projection of lines: Parallel, Perpendicular, inclined to one plane and inclined to both the planes.

UNIT-III

Projection of planes: Plane parallel, perpendicular and inclined to one reference plane. Planes inclined to both the reference planes.

Projection of Regular Solids-Projection of regular solids, Cube, prisms, pyramids, tetrahedron, Cylinder and cone, axis inclined to one plane and both planes, Projections of Regular Solids.

UNIT-IV

Projections of Sections and sectional views of right angular solid-Prism, Cylinder, Pyramid, Cone.

Development of surfaces of Right Regular Solids – Prism, Pyramid, Cylinder and Cone.

UNIT-V Isometric Projections:

Principles of Isometric projection – Isometric Scale, Isometric Views, Conventions; Isometric Views of lines, Planes, Simple and compound Solids; Conversion of Isometric views to Orthographic views and Vice-versa, Conventions.

Course Outcomes:

The students will be able to

CO-1: Understand various commands, modify the applications and object properties in AUTOCAD
CO-2: Analyse the Projections of Points and solids
CO-3: Estimate the use of drawings, dimensioning, scales and conic sections
CO-4: Compare the Conversion of Isometric views to Orthographic views

TEXT BOOKS:

1. Agrawal B & Agrawal C.M. (2012), Engineering Graphics, TMH Publications.
2. Bhatt N.D., Panchal V.M. & Ingke P.R., (2014), Engineering Drawing, Charotar Publishing House.

REFERENCE BOOKS:

1. Narayana, K.L. & P Kannaiah (2008), Text book on Engineering Drawing, Scitech Publishers.
2. (Corresponding set of) CAD Software Theory and User Manuals.
3. Engineering Graphics. P I Varghese Tata McGraw Hill Education Pvt. Ltd.
4. Engineering Drawing – P.J.Shan S.Chand Publishers.
5. Engineering Drawing – Johle/Tata McGraw Hill Book Publishers.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

PHYSICS LAB

B. TECH- I Semester **L/T/P/C**
0/0 /3 /1.5

Pre-requisites: None

Course Objectives:

The laboratory course will develop student's knowledge in/on...

- Determination of frequency of AC supply by Sonometer
- Determination of the wavelengths, slit widths with high degree of accuracy from diffraction phenomena using conventional light and laser light
- Determination of time constant of RC circuit and optical fibre characteristics.
- Determination of Solar cell, LED and LASER diode etc. characteristics
- Determination of the wavelength and radius of curvature of Plano convex lens using Newton's rings

Name of the Experiment

1	Torsional Pendulum- Determination of rigidity modulus of materials of a wire
2	Determination of energy gap of material of a p-n junction
3	Study of LED diode V-I & P-I characteristics
4	Determination of dispersive power of a material of a prism-spectrometer.
5	Bending losses of optical fibres and evaluation of numerical aperture of a given optical fibre
6	Study of decay charge & determination of time constant of RC circuit
7	Study of characteristics of Solar cell
8	Determination of wavelength of laser source- Diffraction grating
9	Determination of frequency of AC supply - Sonometer
10	Study of LASER diode V-I & L-I characteristics
11	Determination of wavelength and radius of curvature of Plano convex lens using Newton Rings Experiment.
12	Study of P-N diode Characteristics.

Course Outcomes:

CO1: Estimate the frequency of tuning for and AC supply with the help of stretched strings
CO2: Analyze as well as compare the intensity distribution of interference and diffraction patterns
CO3: Draw the characteristics of electrical and electronic circuits and evaluate the dependent parameters
CO4: Explore and understand the applications of semiconducting devices
CO5: Evaluates the wavelength and radius of curvature of Plano convex lens by Newton's rings

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

PROGRAMMING FOR PROBLEM SOLVING LAB

B. TECH- I Semester **L/T/P/C**
0/0 /3 /1.5

Pre-requisites: None

Course Objectives:

- To provide the necessary knowledge on general engineering problem solving methodologies.
- To provide necessary foundations for step by step computer program development and to present the basic concepts in C programming language.
- To prepare the students to write modular and readable C Programs.
- The Course introduces the essential concepts like abstract data types, user defined data types.
- To analyze the performance of algorithms and how to use such knowledge for later processing with the help of files.
- Aims to train the students to write working programs to solve problems.

WEEK-1

1.a) Write a C program to find the areas of shapes like circle, square, rectangle and triangle

1.b) Write a C program to demonstrate Type Casting and Type Conversion.

WEEK-2

2.a) Write a C program to find the roots of a quadratic equation.

2.b) Write a C program to find greatest of any 3 numbers.

2.c) 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)

WEEK-3

3.a) Fibonacci sequence is defined as follows: the first and second terms in 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.

3.b) A positive integer d is said to be a factor of another positive integer N if when N is divided by d, the remainder obtained is zero. For example, for number 12, there are 6 factors 1, 2, 3, 4, 6, 12. Every positive integer k has at least two factors, 1 and the number k itself.Given two positive integers N and k, write a program to print the kth largest factor of N.

Input Format: The input is a comma-separated list of positive integer pairs (N, k).

Output Format: The k^{th} highest factor of N. If N does not have k factors, the output should be 1.

Constraints:

- 1<N<10000000000
- 1<k<600.

You can assume that N will have no prime factors which are larger than 13.

Example

- **Input**: 12,3
- **Output**: 4

3.c) Write a C program to find the second largest number in a set of n numbers.

WEEK-4

4.a) Write a C program to generate Pascal's triangle.

4.b) Write a C program to find the LCM(Least Common Multiple) and GCD (greatest common divisor) of two given integers.

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

WEEK-5

5.a) Write a C program to find sum of series 1+x^1+x^2+x^3+.....+x^n using functions.

5.b) Write a C program to find factorial of a given number using Recursion.

5.c) Write a C program to demonstrate the use of Storage Classes

WEEK-6

6.a) Write a C program to find both the largest and smallest number in a list of integers.

6.b) N monkeys are invited to a party where they start dancing. They dance in a circular formation, very similar to a Gujarati Garba or a Drum Circle. The dance requires the monkeys to constantly change positions after every 1 second.

The change of position is not random & you, in the audience, observe a pattern. Monkeys are very disciplined & follow a specific pattern while dancing.

Consider N = 6, and an array monkeys = {3,6,5,4,1,2}.

This array (1-indexed) is the dancing pattern. The value at monkeys[i], indicates the new of position of the monkey who is standing at the ith position.

Given N & the array monkeys[ ], find the time after which all monkeys are in the initial positions for the 1st time.

Constraints

1<=t<=10 (test cases)

1<=N<=10000 (Number of monkeys)

Input Format

First line contains single integer t, denoting the number of test cases.

Each test case is as follows -

Integer N denoting the number of monkeys.

Next line contains N integer denoting the dancing pattern array, monkeys[].

Output

t lines,

Each line must contain a single integer T, where T is the minimum number of seconds after which all the monkeys are in their initial position

6.c) Write a C program to insert an element at a given position in an Array using functions.

WEEK-7

7. Write a C program to perform all of the following:
   a) Matrix Addition and subtraction
   b) Matrix Multiplication
   c) Find Transpose and test if a matrix is symmetric or not
   d) A traditional chess board consists of 8 rows and 8 columns. Write a program to count the number of safest places that a King can be positioned when 3 queens (ministers) are placed at different positions on the chess board.

WEEK-8

8.a) Write a C program to perform linear search

8.b) Write a C program to perform binary search

8.c) Write a C program to sort the elements using bubble sort

WEEK-9

9.a)Write a C program to insert a sub-string in to a given main string at a given position.

9.b) Write a C program to count number of characters, words and sentences in a given text.

9.c) Write a C program to determine if the given string is a palindrome or not.

9.d) Write a C program to sort the given names in alphabetical order.

WEEK-10

10.a) Write a C program to implement array of structures.(use student structure) and write functions to
   i. to search student data using hall ticket number.

ii. to sort the student records based on the total marks.

10.b) Write a menu driven C program that uses functions to perform the following operations on complex numbers stored in a structure:

i. Reading a complex number
ii. Writing a complex number
iii. Addition of two complex numbers
iv. Multiplication of two complex numbers

10.c) Write a C program to demonstrate Unions and enum.

WEEK-11

11.a) Write a C program for Pointer Arithmetic.
11.b) Write a C program to swap two numbers using Call by value and Call by reference.
11.c) Write a C program to demonstrate calling of a function (like add, subtract, multiply) using a function pointer.

WEEK-12

12.a)Write a C program using pointer to create a two dimensional matrix, to input values in to the matrix and to display the matrix and its transpose. Free the memory properly.
12.b)Write a C program to demonstrate on structures and pointers.
12.c) Write a C program for dynamic creation of structures using pointers

WEEK-13

13.a)Write a C program to count no of alphabets, no of digits, no of special symbols, no of white spaces and no of tabs in a given text file.

13.b) Write a C program which copies one text file to another text file and verify the correctness.
13.c) Write a C program which copies one binary file to another binary file and verify the correctness.

WEEK-14

14.a) Write a C program to produce reverse of the content of a text fie into another text file and verify the result.
14.b) Write a C program to merge two text files into a third text file (i.e., the contents of the first file followed by those of the second are put in the third file) and verify the correctness.

WEEK-15

15.a) Write a command-line C program to reverse the first n characters in a file.
(Note: The file name and n are specified on the command line.)
15.b)Write a C Program that removes all comment lines from a C source file.

Course Outcomes:

CO-1: Understand basic structure of the C Programming, data types, declaration and usage of variables, control structures and all related concepts.
CO-2: Ability to understand any algorithm and Write the C programming code in executable form.
CO-3: Implement Programs using functions, pointers and arrays, and use the pre-processors to solve real time problems.
CO-4: Ability to use file structures and implement programs on files.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
DIFFERENTIAL EQUATIONS AND VECTOR CALCULUS

B. Tech: II- Semester **L/T/P/C**
3/1/0/4

Pre-requisites: Mathematical Knowledge at pre-university level

Course Objectives:

To learn

- Methods of solving the applications of differential equations.
- To solve initial value problems using differential equations.
- Evaluation of multiple integrations and their applications
- The physical quantity involved in Engineering field related to vector field.
- To apply fundamental theorems of vectors integrations in their applications.

UNIT-I: Ordinary Differential Equations of First Order: Exact, Non-Exact differential equations, linear and Bernoulli's differential equations, Applications: Newton's law of cooling, Law of Natural growth and decay.

UNIT-II: Ordinary Differential Equations of Higher Order: Second order linear differential equations with constant coefficients, Non-Homogeneous terms of the type e^{ax}, sin ax, cos ax, polynomials in x, e^{ax} V(x), Method of variation of parameters.

UNIT-III: Multivariable Calculus (Integration): 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.

UNIT-IV: Vector Differentiation: Vector point functions and scalar point functions. Gradient, Divergence and Curl. Directional derivatives, Tangent plane and normal line. Scalar potential functions. Solenoidal and Irrotational vectors.

UNIT-V: Vector Integration: Line Integrals, Surface Integrals and Volume Integrals. Theorems of Green, Gauss and Stokes (without proofs) and their applications.

COURSE OUTCOMES:

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

CO-1: Apply the fundamental concepts of ordinary differential equations to real time problems.
CO-2: Find the complete solution of a non homogeneous differential equations and applying its concepts in Engineering problems.
CO-3: Evaluate the multiple integrals in various coordinate systems.
CO-4: Apply the concepts of gradient, divergence and curl to formulate Engineering problems.
CO-5: Analyse line, surface and volume integrals using fundamental theorems.

TEXT BOOKS:

1. B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 42nd Editions, 2012.
2. Erwin kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley & Sons, 2006.
3. T.K.V. Iyengar, Engineering Mathematics-II, S. Chand, 2018.

REFERENCE BOOKS:

1. G.B. Thomas and R.L. Finney, Calculus and Analytic geometry, 9th Edition, Pearson, Reprint, 2002.
2. Paras Ram, Engineering Mathematics, 2nd Edition, CBS Publishers
3. S.L. Ross, Differential Equations, 3rd Ed., Wiley India, 1984.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
MODERN CHEMISTRY

B. Tech: II- Semester **L/T/P/C**
3/0/0/3

Pre-requisites: None

COURSE OBJECTIVES:

- To bring adaptability to the concepts of chemistry and to acquire the required skills to become a perfect engineer.
- To acquire the knowledge of electrochemical cells, different batteries.
- To acquire the knowledge of corrosion and it's control methods.
- To acquire the knowledge of water treatment which are essential for the Engineers in industry.
- To acquire the knowledge of Amino acids, Proteins and nucleic acids
- To acquire the knowledge and skills of forensic science and importance of spectroscopic techniques in processing crime scene evidence.

UNIT-I: Batteries

Batteries: Introduction to Electrochemical and Electrolytic cells, e.m.f. and it's calculation, primary cells-lithium cells. Secondary cells – Pb-acid storage cell, lithium-ion cells, Fuel cells-hydrogen-oxygen fuel cell. Methanol-oxygen fuel cell-advantages and applications.

UNIT-II: Corrosion & It's control methods

Corrosion & It's control methods: Introduction, causes of corrosion, types of corrosion-dry and wet corrosion-mechanism of electrochemical corrosion. Factors affecting on corrosion and corrosion control methods- cathodic protection(sacrificial anodic protection and impressive current cathodic protection) and surface coatings (anodic and cathodic), Methods of application of metal coatings-Hot dipping(galvanization and tinning) and electroplating of copper.

UNIT-III: Water Technology

Introduction, types of hardness, units. Estimation of hardness of water-EDTA method. Boiler troubles- scales and sludges, Caustic embrittlement and boiler corrosion. Treatment of Boiler feed water-Ion- exchange process. De-salination of brackish water-Reverse Osmosis. Domestic water treatment- specifications and steps involved in the treatment of potable water.

UNIT-IV: Amino acids-Proteins and Nucleic acids

Amino acids -Proteins: Introduction to Amino acids, classification based on nutritional values & structure, peptide bond formation. Introduction to proteins, functional classification of proteins, and structures. **Nucleic acids:** Structure and properties of RNA & DNA.

UNIT-V: Forensic Drug Analysis

Introduction to forensic drug chemistry and classifications of drugs and drug abuse and forensic drug analysis by Ultra violet and visible spectra: Basic principle Lambert and Beers Law. It's applications in forensic chemistry .Infrared spectra: Basic principle, qualitative analysis and interpretation of IR spectra, forensic applications.NMR: Basic principle, Chemical shifts, Spin-spin coupling, interpretation of spectra and forensic application

Course Outcomes: The basic concepts included in this course will help the student to gain:

CO-1: The knowledge of electrochemical cells, different batteries
CO-2: The knowledge of principles and concepts in corrosion & it's control methods.
CO-3: The knowledge of Water treatment.
CO-4: The knowledge of Amino acids, Proteins and Nucleic acids.
CO-5: The knowledge of principles and concepts in Forensic drug chemistry and it's analysis.

SUGGESTED READING:

(i) Text book of Engineering Chemistry by Jain & Jain.
(ii) Text book of Engineering Chemistry by M. Thirumala Chary, E. Laxminarayana.
(iii) K. Shashikala – Pearson publications
(iv) University chemistry, by B. H. Mahan
(v) Engineering Chemistry by Shashi Ch
(vi) Fundamentals of Forensic science by Max M Houck
(vii) Lee & Gaensslen : Advances in Forensic Science, (Vol. 2) Instrumental Analysis.
(viii) Settle, F.A. (1997) Handbook of Instrumental Techniques for Analytical Chemistry, Prentice Hall
(ix) Biochemistry by U.SATYANARAYANA
(x) Saferstein, R (1982) Forensic Science Hand Book, Vol I, II and III, Pretince

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

DATA STRUCTURES AND ALGORITHMS

B. Tech: II- Semester **L/T/P/C**
4/ 0/0/ 4

Prerequisites: A course on "Programming for Problem Solving".

Course Objectives:

- Exploring basic data structures such as stacks and queues.
- Introduces a variety of data structures such as hash tables, search trees, heaps, graphs.

UNIT - I

Basic Concepts: Algorithm specification- Introduction, Performance analysis and Performance measurement. Arrays: The Abstract data type, Sparse matrices- Introduction, Sparse matrix representation, Transposing a matrix.

Stacks and Queues: Stack Abstract Data Type, Stack operations, Queue Abstract Data Type, Queue operations. Evaluation of expressions- Expressions, Postfix notations, Infix to postfix.

UNIT - II

Linked Lists: Singly linked lists and chains, Representing chains, Linked stacks and Queues, Doubly linked lists, Circular lists.

Trees: Introduction, Binary trees- The abstract data type, Properties of binary trees, Binary tree representations, Binary tree traversals- Inorder traversal, Preorder traversal, Postorder traversal.

Binary search trees: Definition, Searching a binary search tree, Insertion into a binary search tree, Deletion from a binary search tree, Joining and Splitting binary search trees, Height of a binary search tree.

UNIT - III

Heaps: Priority Queues, Definition of MAX heap, insertion into a MAX Heaps, Deletion from a MAX Heaps.

Efficient Binary Search Trees: Optimal binary search trees, AVL trees, rotations of AVL trees. Multiway Search Trees: M-way search trees, B-trees.

UNIT -IV

Hashing: Introduction, Hash functions, Collision resolution Techniques - Hash table overflow, Extendible hashing.

Graphs: The Graph Abstract Data Type- Introduction, Definition, Graph representations, Elementary graph operations- Depth first search, Breadth first search.

UNIT - V

Sorting-Types of sorting, Insertion sort, Selection sort, Quick sort, Merge sort, Heap sort, External sorting- K-way merge sort, Comparison of all sorting methods.

Course Outcomes:

CO-1: Defining the basic techniques of algorithm analysis
CO-2: Explaining the linear data structures such as List, Stack, Queue and its applications
CO-3: Implement non-linear data structure such as Trees, Graphs and its applications
CO-4: Apply suitable algorithms for sorting Techniques
CO-5: Choose appropriate algorithm for Searching and Hashing

TEXT BOOK:

1. Fundamentals of Data Structures in C, 2nd Edition, E. Horowitz, S. Sahni and Susan Anderson Freed, *Universities Press*.

REFERENCE BOOKS:

1. Data Structures: A Pseudocode Approach with C, 2nd Edition, R. F. Gilberg and B.A. Forouzan, Cengage Learning.
2. Data Structures using C – A. S. Tanenbaum, Y. Langsam, and M.J. Augenstein, *PHI/Pearson Education*.

VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

PYTHON PROGRAMMING

B. Tech: II- Semester **L/T/P/C**
4 /0/0/4

Prerequisites: A course on "Programming for Problem Solving".

Course Objectives:

The purpose of the course is to make students

- To develop Python programs with conditionals and loops.
- To develop Python functions and call them.
- To develop and use Python data structures – lists, tuples, dictionaries.
- To do input/output with files in Python.
- To get exposure to various problems solving approaches of computer science

UNIT – I

Introduction to Python: What is Python?, What is Python Good For?, Python History, How does Python Execute a Program, Review of a Simple Program, Some of the Basic Commands, Variables, Statements, Input/Output Operations, Keywords, Variables, Assigning values, Standard Data Types, Strings, Operands and operators.

UNIT – II

Understanding the Decision Control Structures: The if Statement, A Word on Indentation, The if … else Statement, The if … elif … else Statement,

Loop Control Statements: The while Loop, The for Loop, Infinite Loops, Nested Loops.

The break Statement, The continue Statement, The pass Statement, The assert Statement, The return Statement.

UNIT – III

Functions- Function Definition and Execution, Scoping, Arguments: Arguments are Objects, Argument Calling by Keywords, Default Arguments, Function Rules, Return Values.

Advanced Function Calling: The apply Statement, The map Statement, Indirect Function Calls, Anonymous Functions.

UNIT - IV

Lists: List, Creating List, Updating the Elements of a List, Sorting the List Elements. Storing Different Types of Data in a List, Nested Lists, Nested Lists as Matrices, List Comprehensions.

Tuples: Creating Tuple, Accessing the Tuple Elements, Basic Operations on Tuples, Functions to Process Tuples, Nested Tuples, Inserting Elements in a Tuple, Modifying Elements of a Tuple, Deleting Elements from a Tuple.

Sets: Creating Set, Basic Operations on Sets, Methods of Set.

Dictionaries: Operations on Dictionaries, Dictionary Methods, Using for Loop with Dictionaries, Sorting the Elements of a Dictionary using Lambdas, Converting Lists into Dictionary.

UNIT – V

Modules: Importing a Module, Tricks for Importing Modules, Packages.

Exceptions and Error Trapping: What is an Exception?, Exception Handling: try..except..else.., try..finally.., Exceptions Nest, Raising Exceptions, Built-In Exceptions.

Files: Working with Files and Directories, File Processing, Controlling File I/O.

Course Outcomes:

CO-1: Defining the fundamentals of writing Python scripts.

CO-2: Expressing the Core Python scripting elements such as variables and flow control structures.

CO-3: Apply Python functions to facilitate code reuse.

CO-4: Extending how to work with lists and sequence data.

CO-5: Implement file operations such as read and write and Adapting the code robust by handling errors and exceptions properly.

TEXT BOOKS:

1. The Complete Reference-Python by Martin C. Brown, Mc Graw Hill
2. Python Bible- Complete Python Language Reference by Dave Brueck and Stephen Tanner

REFERENCE BOOKS:

1. Python Programming for Beginners by Adam Stewart
2. Python Essential Reference (3rd Edition) by David M. Beazleyf

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

DATA STRUCTURES AND ALGORITHMS LAB

B. Tech: II- Semester **L/T/ P/C**
0/0/3/1.5

Prerequisites: A Course on "Programming for problem solving".

Course Objectives:

- It covers various concepts of C programming language
- It introduces searching and sorting algorithms
- It provides an understanding of data structures such as stacks and queues.

LIST OF EXPERIMENTS:

1. Write a program that uses functions to perform the following operations on singly linked list.:
   i) Creation ii) Insertion iii) Deletion iv) Traversal
2. Write a program that uses functions to perform the following operations on doubly linked list.:
   i) Creation ii) Insertion iii) Deletion iv) Traversal
3. Write a program that uses functions to perform the following operations on circular linked list.:
   i) Creation ii) Insertion iii) Deletion iv) Traversal
4. a)Write a program to perform the following operations on stack using Arrays
   i) Creation ii)push iii)pop iv)display
   b) Write a program to evaluate an expression.
5. Write a program to perform the following operations on stack using linked list
   i) Creation ii)push iii)pop iv)display
6. Write a program to perform the following operations on queue using arrays
   i) Creation ii)insert iii) delete iv)display
7. Write a program to perform the following operations on queue using linked list
   i) Creation ii)insert iii) delete iv)display
8. Write a program to perform insert and delete operations on binary search tree.
9. Write a program to implement the tree traversal methods.
10. Write a program to perform following operations on a AVL Tree
    i) Creation ii) insertion iii) deletion iv) display
11. Write a program to perform following operations on a B-Tree
    i) Creation ii) insertion iii) deletion iv) display
12. Write a program to implement linear probing technique.
13. Write a program to implement BFS and DFS techniques on a graph.
14. Write a program that implements the following sorting methods to sort a given list of integers in ascending order
    i) Insertion sort ii) Selection sort iii) Quick sort
15. Write a program to implement Heap sort.

Course Outcomes:

CO-1: Explaining the linear data structures such as List, Stack, Queue and its applications
CO-2: Implement non-linear data structure such as Trees, Graphs and its applications
CO-3: Apply suitable algorithms for sorting Techniques
CO-4: Choose appropriate algorithm for Searching and Hashing

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

PYTHON PROGRAMMING LAB

B. Tech: II- Semester **L/T/P/C**
0/0/3/1.5

Prerequisites: A course on "Programming for Problem Solving".

Course Objectives:

The purpose of the course is to make students

- To develop Python programs with conditionals and loops.
- To develop Python functions and call them.
- To develop and use Python data structures – lists, tuples, dictionaries.
- To do input/output with files in Python.
- To get exposure to various problems solving approaches of computer science

Week 1:

a. Write a program to perform the arithmetic operators. Find out the student total marks and average
b. Write a program to apply type conversion techniques in python. Convert from string to int, int to float, float to string

Week 2:

a. Write a program to display whether a student passed in a single subject or not using if statement
b. Write a program to display the grade of a student based on the average of 3 subject marks using if-elif statement

Week 3:

a. Write a program to display the reverse of a given number using while loop and for loop
b. Write a program to display the factorial of a given number using while loop and for loop

Week 4:

a. Write a program to display the prime numbers between 2 and n using while loop and for loop
b. Write a program to print the average marks of 10 students using loops(input 3 subjects for each student)

Week 5:

a. Write a program to define a function to display the grade of a student by using positional arguments(rno, sub1,sub2,sub3)
b. Write a program to define a function to display total bill for a shopping by taking customer name and number of items as keyword arguments.

Week 6:

a. Write a program to define a function to calculate the area of a circle using default arguments
b. Write a program to display the reverse of a given number using recursive function.

Week 7:

a. Write a program to convert a decimal number to binary number using recursive function.
b. Write a program to perform the arithmetic operations using the functions to each opearation.(add(),sub(),mul(),div())

Week 8:

a. Write a program to perform bubble sort on a list without using the sort().
b. Write a program to display the elements of a list in reverse order without using the reverse()

Week 9:

a. Write a program to find a student name from the list of students
b. Write a program to perform addition of 2 matrices using nested lists

Week 10:

a. Write a program to perform multiplication of 2 matrices using nested lists
b. Write a program to demonstrate the tuple operations

Week 11:

a. Write a program to create a list and eliminate the duplicate values from the list
b. Write a program to create 2 sets and perform union, intersection, set difference and symmetric difference operations on sets.

Week 12:

a. Write a program to create a student dictionary with the rno as key and a list as the values of a key (name,sub1,sub2,sub3) and display a memo with total, avg, result and grade
b. Write a program to create a package Shapes and perform the area calculation for different shapes(use one function for each shape)

Week 13:

a. Write a program to create a package Calculator and perform various arithmetic operations (use one function for each operation like add(),mul(),sub(),div())
b. Write a program to create module with packages like Shapes and Calculator and import the module into program, access the functions defined the in the module.

Week 14:

a. Write a program to create a file and save the details of a students (rno,name,sub1,sub2,sub3)
b. Write a program to open a file of students and display the students details in tabular format like rno,name,sub1,sub2,sub3,total,avg,result,grade

Week 15:

a. Write a program to perform demonstrate filename not exist exception
b. Write a program to demonstrate the variable not available exception

Week 16:

a. Write a program to demonstrate arithmetic exception
b. Write a program to create a lambda function to display whether a person is eligible for voting or not

Course Outcomes:

CO-1: Expressing the Core Python scripting elements such as variables and flow control structures.
CO-2: Apply Python functions to facilitate code reuse
CO-3: Extending how to work with lists and sequence data.
CO-4: Implement file operations such as read and write and Adapting the code robust by handling errors and exceptions properly.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
ENGLISH LANGUAGE AND INTERACTIVE COMMUNICATION SKILLS LAB

B.Tech: II- Semester **L/T/P/C**
0/0/3/1.5

Prerequisites: Basic vocabulary grammar in English

The ELICS Lab focuses on the production and practice of sounds of language to familiarize the students with the use of English in everyday situations both in formal and informal contexts.

Course Objectives:

- To facilitate computer-assisted multi-media instruction enabling individualized and independent language learning.
- To sensitize students to the nuances of English speech sounds, stress and intonation.
- 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 influence of the sounds of their mother tongue.
- To train students to use language appropriately for public speaking and interviews.

SYLLABUS

English Language and Interactive Communication Skills Lab (ELICS) shall have two parts:

a. Computer Assisted Language Learning (CALL) Lab

b. Interactive Communication Skills (ICS) Lab

Module - I

CALL Lab: *Understand the essentials of English pronunciation through dialogues and conversations:* Listening skill- its importance – purpose- process- types- barriers. *Practice*: introduction to phonetics – speech sounds – vowels and consonantal phonemes.

ICS Lab: *Understand the practicalities in using English in formal contexts:* Communication at workplace– spoken vs. written language. *Practice:* Ice-breaking activity and JAM session– situational dialogues – greetings – taking leave – introducing oneself and others.

Module - II

CALL Lab: *Understand the fundamentals of English pronunciation though expressions used in day to day situations:* Structure of syllables – word stress and rhythm– weak forms and strong forms in context. *Practice:* Basic rules of word accent – stress shift – weak forms and strong forms in context.

ICS Lab: *Understand and practice non-verbal cues in various situations:* Features of good conversation – non-verbal communication. *Practice:* Situational dialogues – role play– expressions in various situations – making requests and seeking permissions – telephone etiquette.

Module - III

CALL Lab: *Understand the importance of e-correspondence:* The basics– general format –drafting – features of good e-mails– do's and don'ts of e-mail etiquette. *Practice:* Assignments through e-mails observing e-mail etiquette.

ICS Lab: *Apply the strategies of browsing to make effective oral presentations:* Understanding text features, print features – collecting data needed for the presentation – how to make formal presentations. *Practice:* Formal presentations.

Module – IV

CALL Lab: *Identify and differentiate audio text from the given source while listening to authentic material:* Listening for general details about an event / object/ person or a piece of art. *Practice:* Listening descriptions / discussions / interpretations / comments/ analysis/ evaluations / summaries.

ICS Lab: *Understand:* Public speaking – exposure to structured talks. *Practice:* To make an academic talk – extempore.

Module – V

CALL Lab: *Understand:* Listening for specific details of a survey to fill up the survey sheet.
Practice: Listening to comprehension texts to understand the gist.

ICS Lab: *Understand:* Debate/group discussion based on contemporary topic/survey report, interview skills.
*Practice: Mock group discussion/*mock interviews.

Minimum Requirement of infrastructural facilities for ELICS 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 Headphones

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, an LCD and a projector etc.

Course Outcomes:

After the completion of this course, students will be able to –

CO-1: Understand the nuances of English language through audio-visual experience and group activities.
CO-2: Speak with clarity and confidence which in turn enhances their employability skills.
CO-3: Develop their listening skills so that they may appreciate its role in developing LSRW skills language and improve their pronunciation.
CO-4: Involve the students in speaking activities in various contexts.

References:

1. Exercises in Spoken English. Parts I –III. CIEFL, Hyderabad. Oxford University Press.
2. Spoken English: A self-learning guide to conversation practice by V Sasikumar and P V Dhamija, Tata McGraw-Hill, 2008.
3. Fundamentals of English Grammar, Third Edition by Betty Schrampfer Azar, Barbara F. Matthies and Shelley Hartle, Longman.
4. Handbook for Technical Writing by David A Mc Murrey & Joanne Buckely CENGAGE Learning 2008.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)
ENGINEERING & IT WORKSHOP LAB

B. Tech: II- Semester **L/T/P/C**
0/0/3/1.5

Pre-requisites: None

Course Objectives:

- Know the usage of various tools and their application in house wiring and Soldering.
- Identify a particular component from the given group of passive electronic components.
- Know the usage of various Voltage sources and equipment.
- Know the concepts of hardware and assemble and dissemble of computer.
- Know the installation of XP and Linux software.
- Overview of Microsoft word and table formats, Mail-merge concepts, Hyperlink concepts.
- Overview of Microsoft Excel, Functions and formulas.
- Overview of Microsoft PowerPoint , Slides creation, Layouts and insert images
- Overview of Microsoft Access , Creation of Tables , data base
- Information of data analysis functions and concatenate functions.

UNIT-I : TRADES FOR EXERCISES:

1. House – wiring
2. Soldering

UNIT-II : ELECTONIC COMPONENTS AND EQUIPMENTS

1. Passive components: Different types of: resistors, inductors, capacitors, potentiometers, Thermistor, Transformers.
2. Active components: Diode, Zener diode, Varactor diode, LED, Photo diode, BJT, Photo transistor, FET, LDR, Solar cell, Photocell, Optocoupler.
3. Voltage Sources: DC battery,. AC power supply, DC power supply.
4. Measuring Instruments: Different types of Voltmeters, Ammeters, Multimeter, CRO, DSO and Function Generator.

UNIT-III : INTRODUCTION TO COMPUTERS

Block diagram of computer – Memory functions of the CPU along with the configuration of each peripheral. Identify the peripherals of a computer, components in a CPU and its functions. Disassemble and assemble the PC back to working condition. Every student should individually install MS windows and Linux on the personal computer. Students should get connected to their Local Area Network and access the Internet.

UNIT-IV : INTRODUCTION TO MS OFFICE

Overview of Microsoft Word, Formatting Fonts in word, Drop Cap in word, Applying Text effects, Using Character Spacing, Borders and Colors, Inserting Header and Footer, Mail-merge concepts. Inserting table, Bullets and Numbering, Changing Text Direction, Cell alignment, Footnote, Hyperlink, Symbols, Spell Check, Track Changes.

Overview of Microsoft Excel, Description about Spread Sheet, Gridlines, Format Cells, Summation, auto fill, Formatting Text, Cell Referencing, Filters, Formulae in excel – average, std deviation, Charts, Renaming and Inserting worksheets, Hyper linking, Count function.

Overview of Microsoft PowerPoint, PPT Orientation, Slide Layouts, Inserting Text, Word Art, Formatting Text, Bullets and Numbering, Auto Shapes, Lines and Arrows, Hyperlinks, Inserting – Images, Clip Art.

Overview of Microsoft Access, Creation of Tables, creation of data base, import or export the data base, hyperlinks to another tools.

UNIT-V: DATA ANALYSIS

Insert tables, Draw the column chart, Pie chart, Line chart, bar Diagrams and also insert Auto functions. Data analysis functions: Concatenate, Len, Count of sell, sum if function, average if condition, find/search techniques, if error function, count ifs function.

Course Outcomes:

CO-1: Know the fundamental knowledge of House wiring and soldering and their usage in real time Applications.
CO-2: Gain knowledge on electronic components and measuring instruments.
CO-3: Use basic concepts of computer hardware for assembly and disassembly.
CO-4: Use Microsoft tools for exercise.

TEXT BOOKS:

1. Workshop Manual – P.Kannaiah / K.L.Narayana/Scitech Publishers.
2. Workshop Manual – Venkat Reddy/BS Publication / 6th Edition.

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VAAGDEVI COLLEGE OF ENGINEERING
(AUTONOMOUS)

SPORTS

B. TECH- II Semester **L/T/P/C**
2/0 /0 /0