

### **Vision of the Institution**

To ignite the minds of the students through academic excellence so as to bring about social transformation and prosperity.

### **Mission of the Institution**

- To expand the frontiers of knowledge through Quality Education.
- To provide valued added Research and Development.
- To embody a spirit of excellence in Teaching, Creativity, Scholarship and Outreach.
- To provide a platform for synergy of Academy, Industry and Community.
- To inculcate high standards of Ethical and Professional Behavior.

### **Vision of EEE Department**

“Centre of Excellence in Education and Research in the field of Electrical and Electronics Engineering and to become the foremost academic department through its education and research programs”

### **Mission of EEE Department**

- To develop innovative, efficient and proficient electrical engineers.
- To keep the curriculum industry friendly, with due regard to the University curriculum.
- To participate in large projects of National and International importance.
- To promote ethical and moral values among the students so as to make them emerge as responsible professionals.

### **Program Educational Objectives (PEOs)**

**PEO 1.** To produce Electrical and Electronics Engineering graduates who have strong foundation in Mathematics, Sciences and Basic Engineering.

**PEO 2.** To provide intensive training in problem solving, laboratory skills and design skills to use modern engineering tools through higher education and research.

**PEO 3.** Ability to seek employment in a variety of engineering (or) engineering technology positions to specialize in specific areas of interest and work successfully in their chosen career aspirations.

**PEO 4.** To inculcate in students professional and ethical attitude, effective communication skills, teamwork skills, multidisciplinary approach, and an ability to relate engineering issues to broader social context through life-long learning.

## **Program Outcomes(POs) of EEE Department**

### **Engineering Graduates will be able to:**

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

## **Program Specific Outcomes (PSOs) of EEE Department**

**PSO 1:** The EEE program must demonstrate knowledge and hands-on competence in the application of electrical and electronics circuits in a rigorous mathematical

environment at or above the level of algebra and trigonometry.

**PSO2:** The EEE program must demonstrate that graduates can apply interdisciplinary project management techniques to electrical and electronics systems.

**PSO 3:** The EEE program must demonstrate that graduates can analyze, design and develop hardware and software for control systems, measurements, power electronics and power systems



# VISHNU INSTITUTE OF TECHNOLOGY:: BHIMAVARAM (Autonomous)

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## Department of Basic Science (R-20 Regulations) Syllabus: I B.Tech-II Semester (Common to all Branches except CS&BS)

**Course Title: Mathematics-II (Vector Calculus & Transform Calculus)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>

### Course Objectives:

1. find the vector differentiation and Integration
2. apply the techniques of Laplace transforms in engineering studies
3. learn the Fourier series of periodic functions and expand a function in sine and cosine series
4. solve problems related to engineering applications using integral transform techniques
5. evaluate the problems to engineering applications using Z- transform techniques

### UNIT-I: Vector Differentiation

Vector Differentiation - Scalar and Vector Fields, Level surfaces, Directional Derivative, Gradient of a Scalar Field, Divergence, Curl of a vector field and applications, Vector Identities

### UNIT-II: Vector Integration

Vector Integration - Line integral, work done, areas, Surface integrals.

Vector integral theorems - Green's theorem, Stokes theorem and Gauss Divergence theorem (All theorems without proof) and applications areas, surface areas and volumes.

### UNIT-III: Laplace Transforms

Laplace transform-Definition-conditions for existence- Linear Property -Shifting Theorems, Laplace transforms of Standard Functions-Transforms of derivatives and integrals-Unit step function-Dirac delta function.

Inverse Laplace transforms by Partial fractions-Convolution theorem (without proof) - inverse by convolution, Solving ordinary differential equations with constant coefficients.

#### **UNIT - IV: Fourier Series**

Introduction, Periodic function, Dirichlet's conditions, Fourier series of periodic function, Fourier series at the point of discontinuity, Fourier series of even and odd functions, Half-range Fourier Sine and Cosine series. Fourier series in an arbitrary interval.

#### **UNIT- V: Fourier Transforms and Z-Transforms**

Fourier integral theorem (only statement) – sine and cosine integrals, Fourier transforms – sine and cosine transforms –Inverse Formulae-Properties- Finite Fourier Transforms.

Z-transform – properties – Damping rule – Shifting rule – Initial and final value theorems – Inverse Z – transform - Convolution theorem – solving difference equations by using Z-transforms.

#### **Text Books:**

1. B. S. Grewal, Higher Engineering Mathematics, 42nd Ed., Khanna Publishers, New Delhi, 2012
2. Erwin.Kreyszig,Advanced Engineering Mathematics,9th Ed., Wiley, 2012

#### **References:**

1. T.K.V.Iyengar, B. Krishna Ghandhi, S. Ranganathan and M.V.S.S.N.Prasad, Engineering Mathematics, Volume-I, 12<sup>th</sup> Ed., S. Chand Publishers, 2014
2. B. V. Ramana, Engineering Mathematics, 4<sup>th</sup> Ed., Tata McGraw Hill, New Delhi, 2009
3. D. S. Chandrashekharaiyah, Engineering Mathematics, Volume 1, Prism Publishers, 2010
4. N.P. Bali and Manish Goyal, A text book of Engineering Mathematics, Laxmi Publications, reprint, 2008

#### **Course Outcomes:**

After completing this course, the students will be able to

1. understand gradient, divergence, curl and their physical significance
2. compute line, surface and volume integrals and evaluate the work done, flux, potential functions
3. make use of Laplace transforms in solving the differential equations with the initial and boundary conditions.
4. compute Fourier series of periodic functions
5. solve problems related to engineering applications using transform techniques

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Department of Basic Science

Syllabus: I B. Tech-I/II Semester

(R-20 Regulations)

(Common to all circuitual branches like ECE, EEE, CSE, IT, AI&DS and AI&ML etc.)

**Course Title: Applied Physics**

**L T P C**

**3 0 0 3**

**Course Objectives:**

- To identify the importance of the optical phenomenon i.e. interference, diffraction and polarization related to its Engineering applications
- To Understand the mechanism of emission of light, utilization of lasers as coherent light sources for low and high energy applications. Study of propagation of light through optical fibers and their implications in optical communications
- To explain the significant concepts of dielectric and magnetic materials that leads to potential applications in the emerging micro devices.
- Enlightenment of the concepts of Quantum Mechanics and to provide fundamentals of deBroglie matter waves, quantum mechanical wave equation and its application and to know the importance of free electron theory for metals.
- Enlightenment of the importance of band theory for crystalline solids and metals. To understand the physics of Semiconductors and their working mechanism.

## **UNIT –I: Wave Optics**

### **Interference:**

Introduction - Principle of Superposition-Coherence-Conditions for Sustained Interference -Interference in thin films (reflected Geometry)-Newton's Rings-Determination of Wavelength and Refractive Index-Applications of Interference.

### **Diffraction:**

Introduction- Fresnel and Fraunhofer diffraction-Fraunhofer Diffraction due to Single slit, Double slit –N – slits (Qualitative)-Diffraction Grating -Determination of Wavelength-Applications of Diffraction.

### **Polarization:**

Introduction- types of polarized light, Polarization by reflection, refraction and double refraction- Nicol's prism-Half wave and Quarter wave plates

## **UNIT- II: Lasers and Fiber Optics**

### **Lasers:**

Introduction-Characteristics of Laser–Spontaneous and Stimulated emissions of radiation-Einstein's coefficients & Relation between them and their significance – population inversion - Ruby laser – Helium Neon laser –Semiconductor diode laser(Qualitative)- Applications of Lasers.

**Fiber Optics:**

Introduction to Optical Fibers-Total Internal Reflection- Construction of optical fibers -Acceptance angle- Numerical Aperture-Classification of fibers based on Refractive index profile, modes -Block Diagram of Fiber optic Communication- Applications of optical fibers.

**UNIT –III: Magnetic Materials & Dielectric Properties****Magnetic Materials:**

Introduction -Magnetic dipole moment-Magnetization-Magnetic susceptibility and permeability- Origin of permanent magnetic moment -Classification of Magnetic materials-Weiss theory of ferromagnetism (qualitative)-Hysteresis-soft and hard magnetic materials-Magnetic device applications.

**Dielectrics :**

Introduction to Dielectrics - Electric polarization - Dielectric polarizability, Susceptibility and Dielectric constant- Types of polarizations - Electronic and Ionic polarizations with mathematical derivations – Orientational polarization (Qualitative)–Internal field in solids -Clausius -Mosotti equation.

**UNIT – IV: Quantum Mechanics and Free Electron Theory of Metals****Quantum Mechanics:**

Introduction- Dual nature of matter-Matter waves, de-Broglie wavelength, Properties of wave function- time independent and time dependent Schrödinger's wave equation-Particle in a one dimensional infinite potential well.

**Free Electron Theory of Metals:**

Classical free electron theory (Qualitative with discussion of merits and demerits)-Quantum free electron theory-Equation for electrical conductivity based on quantum free electron theory-Fermi-Dirac Distribution-density of states (3D) - Fermi Energy.

**UNIT –V: Band Theory of Solids and Semiconductors****Band Theory of Solids:**

Bloch Theorem - Kronig-Penny Model (Qualitative)-E vs K and v vs K diagram- Origin of energy bands - Classification of solids based on energy bands – Effective Mass of an Electron-Concept of a Hole

**Semiconductors:**

Introduction– Intrinsic semiconductors - density of charge carriers-Fermi level – extrinsic semiconductors - P-type & N-type - Density of charge carriers - Dependence of Fermi energy on carrier concentration and temperature - Drift and Diffusion currents – Einstein's equation - Hall effect- Hall coefficient - Applications of Hall effect.

**Text Books:**

- 1.M.N. Avadhanulu, P.G.Kshirsagar "A Text book of Engineering Physics"-S.Chand Publications,2017
2. H.K.Malik & A.K.Singh "Engineering Physics",- McGraw Hill Publishing Company Ltd, 2018
3. P.K. Palanisamy, Applied Physics, SciTech Publications.

**References:**

1. Gerd Keiser “Optical Fiber Communications”- 4/e, Tata Mc GrawHill.
2. Charles Kittel “Introduction to Solid State Physics”, Wiley Publications.
3. S.M.Sze “Semiconductor devices-Physics and Technology”-Wiley.
4. Halliday, Resnick and Walker, “Fundamentals of Physics”, John WileySons.
5. M.R. Srinivasan, Engineering Physics, NewAge International Publishers.
6. Ajoy Ghatak “Optics” Tata Mc GrawHill.

**Course Outcomes:**

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

- CO1: Explain the need of coherent sources and the conditions for sustained interference. Identify the applications of interference in engineering. Analyze the differences between interference and diffraction with applications. Illustrate the concept of polarization of light and its applications.
- CO2 Explain various types of emission of radiation. Identify the role of laser in engineering applications. Describe the construction and working principles of various types of lasers. Explain the working principle of optical fibers. Classify optical fibers based on refractive index profile and mode of propagation. Identify the applications of optical.
- CO3: Explain the concept of dielectric constant and polarization in dielectric materials. Summarize various types of polarization of dielectrics. Classify the magnetic materials based on susceptibility and their temperature dependence. Explain the applications of dielectric and magnetic materials. Apply the concept of magnetism to magnetic devices.
- CO4: Describe the dual nature of matter. Explain the significance of wave function. Identify the role of Schrodinger’s time independent wave equation in studying particle in one-dimensional infinite potential well. Identify the role of classical free electron theory in the study of electrical conductivity.
- CO5: Explain the concept of quantum free electron theory in the study of electrical conductivity. Classify the energy bands of solids. Outline the properties of charge carriers in semiconductors. Identify the type of semiconductor using Hall effect. Identify applications of semiconductors in electronic devices.





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Year/Semester	I B. Tech/II Sem	L	T	P	C
Regulation Year	2020-21	3	0	0	3
Subject	Programming for Problem Solving				
Branch	CSE,IT, AI&DS,EEE				

**Course Objectives:**

- Formulating algorithmic solutions to problems and implementing algorithms in C.
- Understanding branching, iteration and data representation using arrays.
- Modular programming and recursive solution formulation.
- Understanding arrays, pointers and dynamic memory allocation.
- Understanding Strings and Structures

**UNIT-I:**

**Introduction to C Programming-** Identifiers, The main () Function, The printf () Function **Programming Style** - Indentation, Comments, Data Types, Arithmetic Operations, Expression Types, Variables and Declarations, Negation, Operator Precedence and Associativity, Declaration Statements, Initialization.

**Assignment** - Implicit Type Conversions, Explicit Type Conversions (Casts), Assignment Variations, Mathematical Library Functions, Interactive Input, Formatted Output, Format Modifiers.

**UNIT-II:**

**Control Flow-Relational Expressions - Logical Operators:**

**Selection:** if-else Statement, nested if, examples, Multi-way selection: switch, else-if, examples.

**Repetition:** Basic Loop Structures, Pretest and Posttest Loops, Counter-Controlled and Condition-Controlled Loops, The while Statement, The for Statement, Nested Loops, The do-while Statement.

**UNIT-III:**

**Arrays & Pointers:**

**Arrays:** One-Dimensional Arrays, Input and Output of Array Values, Array Initialization, Two-Dimensional Arrays, Larger Dimensional Arrays- Matrices

**Pointers:** Concept of a Pointer, Initialisation of pointer variables, passing by address, Dangling memory, address arithmetic, Dynamic memory management functions, command line arguments.

**UNIT-IV:**

**Modular Programming:** Function and Parameter Declarations, Returning a Value, Classifications of Functions, Variable Scope, Variable Storage Class, Local Variable Storage Classes, Global Variable Storage Classes, Pass by Reference, Passing Addresses to a Function, Array as a Function arguments.

Case Study: Recursion - Mathematical Recursion, Recursion versus Iteration

**UNIT-V:**

**Strings & Structures:**

**Strings:** String Fundamentals, String Input and Output, String Processing, Library Functions.

**Structures:** Derived types, Structures declaration, Initialization of structures, accessing structures, nested structures, arrays of structures, structures and functions, pointers to structures, self referential structures, unions, typedef, bit-fields.

**TEXT BOOKS:**

1. ANSI C Programming, Gary J. Bronson, Cengage Learning.
2. Let us C Authentic Guide to C Programming Language by yashavant kanetkar.
3. The C programming Language, Dennis Richie and Brian Kernighan, Pearson Education.

**REFERENCE BOOKS:**

1. C Programming-A Problem Solving Approach, Forouzan, Gilberg, Cengage.
2. Programming with C, Bichkar, Universities Press.
3. Programming in C, ReemaThareja, OXFORD.
4. C by Example, Noel Kalicharan, Cambridge.

**Course Outcomes:**

1. Write, compile and debug programs in C language.
2. Use different data types in a computer program.
3. Design programs involving decision structures, loops and functions.
4. Explain the difference between call by value and call by reference
5. Understand the dynamics of memory by the use of pointers
6. Understand the sorting and searching algorithms.

**Branch: EEE**

**I Year – II Semester**

**Regulation: R20**

**Sub. Title: ELECTRICAL CIRCUIT ANALYSIS-I**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>

**Sub.Code:**

**Learning Objectives:**

- To study the basic concepts of DC circuits and various network reduction techniques.
- To study the concept of magnetic coupled circuit.
- To study the basic concepts of single phase AC circuits.
- To understand the behavior of RLC networks for Sinusoidal excitations and learn the concept of resonance.
- To understand the applications of network theorems for analysis of electrical networks.

### **UNIT-I**

**Introduction to Electrical Circuits-I:** Basic definitions - electric charge, current, voltage, power and energy. Classification of Network elements, Passive components and their V-I relations. Sources - Dependent and Independent sources, Kirchhoff's laws, Network reduction techniques - Series, Parallel, voltage division rule and current division rule. Star to Delta and Delta to Star transformation, Source transformation technique, Nodal analysis and Mesh analysis, Concept of Super node and Super mesh.

### **UNIT-II**

**Analysis of Coupled Circuits:** Basic definitions - MMF, Flux and Reluctance, Analogy between Electrical and Magnetic circuits. Concept of Self, Mutual Inductance, Dot convention, Coefficient of coupling, Series and Parallel aiding and opposing, Analysis of Coupled circuits using Mesh analysis

### **UNIT-III**

**Single Phase AC Systems:** Periodic waveforms, determination of RMS, Average value, Concept of Phase angle and Phase difference, Waveforms and Phasor diagrams for lagging, leading networks, Power Factor and its significance, Real, Reactive power and Apparent power.

### **UNIT-IV**

**Analysis of AC Networks:** Steady state analysis of R, L and C circuits, Extension of node and mesh analysis to AC networks, Series and parallel Resonance, Variation of Impedance with frequency, Bandwidth, Q factor and Selectivity.

### **UNIT-V**

**Network theorems (DC & AC Excitation):** Thevenin's theorem, Norton's theorem, Superposition theorem, Maximum Power Transfer theorem, Reciprocity theorem, Millman's theorem.

**Course Outcomes:**

Students should be able to

- Solve dc circuits using various network reduction techniques.

- Analyse the coupled circuits.
- Determine various ac quantities for different periodic waveforms.
- Analyse the behavior of RLC networks for Sinusoidal excitations and understand the concept of resonance.
- Solve electrical networks by using principles of Network Theorems.

**Text Books:**

1. Engineering Circuit Analysis by William Hayt and Jack E.Kemmerley,McGraw Hill Company, 6th edition
2. Network Analysis: Van Valkenburg; Prentice-Hall of India Private Ltd

**Reference Books:**

1. Fundamentals of Electrical Circuits by Charles K.Alexander and Mathew N.O.Sadiku, McGraw Hill Education (India).
2. Electric Circuits– (Schaum’s outlines) by MahmoodNahvi& Joseph Edminister, Adapted by KumaRao, 5th Edition – McGraw Hill.
3. Electric Circuits by David A. Bell, Oxford publications
4. Introductory Circuit Analysis by Robert L Boylestad, Pearson Publications
5. Circuit Theory(Analysis and Synthesis) by A.Chakrabarthy,DhanpatRai&Co.

## I B.Tech II Semester

### ELEMENTS OF CIVIL AND MECHANICAL ENGINEERING

EEE

L	T	P	C
3	0	0	3

#### COURSE OBJECTIVES:

- To provide basic fundamental knowledge on buildings, building materials and surveying
- To provide basic fundamentals on foundation, environmental engineering and dams
- To provide basic fundamental knowledge on transportation engineering and understand mechanical engineering materials, various manufacturing process like casting and joining processes.
- Understand the various engineering energy transformation systems used in society
- To get familiarize with the advanced manufacturing technologies used in modern industries.

#### Part – A

### CIVIL ENGINEERING

#### UNIT – I

**Civil Engineering Materials (Properties and uses):** Bricks – stones – sand – cement – concrete – steel sections.

**Introduction to Buildings:** Types of buildings, selection of site for buildings, components of a residential building and their functions

**Surveying:** Objectives – Types – Classification – Principles

#### UNIT – II

**Foundations:** Definition of bearing capacity of soil, functions of foundations, types – shallow and deep. Concept of load bearing and framed structure.

**Environmental Engineering:** Protected water supply, water treatment methods- sewage treatment

**Irrigation Engineering:** Dams and its Types, Purpose of reservoir.

#### UNIT- III

**Transportation Engineering:** Roads- Benefits- Classifications - Traffic signs, Bridges-components of Bridges

#### Part - B

### MECHANICAL ENGINEERING

#### UNIT-III

**Engineering Materials for manufacturing process:** Classification, Properties of Materials. Introduction to Composites, Smart materials-classification and applications

**Casting:** Introduction to Casting, advantages and disadvantages

**Joining processes:** soldering and brazing.

#### UNIT-IV

**Basics:** Introduction to thermodynamics, working principle of internal combustion engines.

heat transfer: Modes of heat transfer,

**Electric Vehicles:** Introduction to electric vehicles, working principle, transmission system, social and environmental importance of electric vehicles.

**Power Generation:** Layout and working principle of thermal and hydroelectric power plants.

#### **UNIT-V**

**Additive Manufacturing:** Introduction to additive manufacturing and its applications, advantages and disadvantages, comparison between additive manufacturing and conventional manufacturing.

**Robotics &Automation:** Introduction to Robotics, classification of robots and applications.  
Concept of Automation, comparison between NC and CNC machines.

#### **COURSE OUTCOMES:**

1. To explore the knowledge on basic surveying and building construction
2. Fundamentals of foundation and environmental engineering.
3. Learn basic knowledge on roads and bridges
4. Various conventional and modern manufacturing processes
5. Fundamentals of I.C. Engine, power generation and working of Electric Vehicles

#### **TEXT BOOKS:**

1. Basic Civil Engineering by Dr. B.C. Punmia, Ashok Kumar Jain, Arun Kr. Jain, Laxmi Pulications.
2. Text Book of surveying Kindle edition by P.Venugopala rao , Vijayalakshmi Akella, PHI learning private ltd. Publisher.
3. Elements of Mechanical Engineering, M.L. Mathur, F.S.Metha & R.P.Tiwari Jain Brothers Pubs, 2009.
4. Production Technology by P. N. Rao by I & II McGraw-Hill publications.
5. Rapid Prototyping-Principles and Applications 3<sup>rd</sup> Edition by Chua Chee Kai, Leong Kah Fai, Lim Chu-Sing, 2003
6. Hybrid Electric Vehicle Technology 1<sup>st</sup> Edition by Automotive Research and Design, ISBN-13: 978-0826900661

#### **REFERENCE BOOKS:**

1. Basics of civil Engineering by Er.Srikrishna A Dhale, S.Chand publications
2. Basic civil Engineering by SS Bhavikatti, New Age International publishers
3. Basic civil and Mechanical Engineering by S Shanmugam, Ms Palanichamy Mc Graw Hill publications
4. Mechanical Engineering Science by K R Gopala Krishna, Subhas publications
5. Thermal Engineering by Ballaney, P L., Khanna Publishers, 2003.
6. Electric and Hybrid Vehicles 1<sup>st</sup> Edition, (Kindle Edition) by Tom Denton, ISBN-13: 978-113884237

**Programming for Problem Solving Lab**

**Course Objectives:**

- Understand the basic concept of C Programming, and its different modules that includes conditional and looping expressions, Arrays, Strings, Functions, Pointers Structures.
- Acquire knowledge about the basic concept of writing a program.
- Role of constants, variables, identifiers, operators, type conversion and other building blocks of C Language.
- Use of conditional expressions and looping statements to solve problems associated with conditions and repetitions.
- Role of functions involving the idea of Modularity.

**Exercise - 1 Basics**

- a) What is an OS Command, Familiarization of Editors - vi, Emacs
- b) Using commands like mkdir, ls, cp, mv, cat, pwd, and man
- c) C Program to Perform Adding, Subtraction, Multiplication and Division of two numbers From Command line

**Exercise - 2 Basic Math**

- a) Write a C Program to Simulate 3 Laws at Motion
- b) Write a C Program to convert Celsius to Fahrenheit and vice versa

**Exercise - 3 Control Flow – I**

- a) Write a C Program to Find Whether the Given Year is a Leap Year or not.
- b) Write a C Program to Add Digits & Multiplication of a number

**Exercise – 4 Control Flow – II**

- a) Write a C Program to Find Whether the Given Number is
  - i) Prime Number
  - ii) Armstrong Number
- b) Write a C program to print Floyd Triangle
- c) Write a C Program to print Pascal Triangle

**Exercise – 5 Functions**

- a) Write a C Program demonstrating parameter passing in Functions and returning values.
- b) Write a C Program illustrating Fibonacci, Factorial with Recursion without Recursion

**Exercise – 6 Control Flow – III**

- a) Write a C Program to make a simple Calculator to Add, Subtract, Multiply or Divide Using switch...case
- b) Write a C Program to convert decimal to binary and hex (using switch call function the function)

### **Exercise – 7 Functions – Continued**

Write a C Program to compute the values of  $\sin x$  and  $\cos x$  and  $e^x$  values using Series expansion. (use factorial function)

### **Exercise – 8 Arrays**

Demonstration of arrays

- a) Search-Linear.
- b) Sorting-Bubble, Selection.
- c) Operations on Matrix.

### **Exercises - 9 Structures**

- a) Write a C Program to Store Information of a Movie Using Structure
- b) Write a C Program to Store Information Using Structures with Dynamically Memory Allocation
- c) Write a C Program to Add Two Complex Numbers by Passing Structure to a Function

### **Exercise - 10 Arrays and Pointers**

- a) Write a C Program to Access Elements of an Array Using Pointer
- b) Write a C Program to find the sum of numbers with arrays and pointers.

### **Exercise – 11 Dynamic Memory Allocations**

- a) Write a C program to find the sum of n elements entered by the user. To perform this program, allocate memory dynamically using malloc () function.
- b) Write a C program to find the sum of n elements entered by the user. To perform this program, allocate memory dynamically using calloc () function.

Understand the difference between the above two programs

### **Exercise – 12 Strings**

- a) Implementation of string manipulation operations with library function.
  - i) copy
  - ii) concatenate
  - iii) length
  - iv) compare
- b) Implementation of string manipulation operations without library function.
  - i) copy
  - ii) concatenate
  - iii) length
  - iv) compare



**Course Outcomes:**

1. Apply and practice logical ability to solve the problem.
2. Understand C programming development environment, compiling, debugging and linking and executing a program using the development environment.
3. Analyzing the complexity of problems, modularize the problems into small modules and then convert them into programs.
4. Understand and apply the inbuilt functions and customized functions for solving the problems.
5. Understand and apply the pointers, memory allocation techniques.

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**Department of Basic Science**  
**Syllabus: I B. Tech-I/II Semester**

(R-20 Regulations)

(Common to all circuitual branches like ECE, EEE, CSE, IT, AI&DS and AI&ML etc.)

**Course Title: Applied Physics Lab**

**L T P C**

**0 0 3 1.5**

## List of Experiments

Conduct 10 out of 15 experiments

1. Determination of wavelength of a source-Diffraction Grating-Normal incidence
2. Newton's rings –Radius of Curvature of Plano Convex Lens.
3. Determination of thickness of a thin object using parallel interference fringes.
4. Determination/ of Rigidity modulus of a material- Torsional Pendulum.
5. Determination of Acceleration due to Gravity and Radius of Gyration- Compound Pendulum.
6. Melde's experiment – Transverse and Longitudinal modes.
7. Verification of laws of stretched string – Sonometer.
8. Determination of velocity of sound – Volume Resonator
9. L C R Series Resonance Circuit
10. Study of I/V Characteristics of Semiconductor diode
11. I/V characteristics of Zener diode
12. Thermistor characteristics – Temperature Coefficient
13. Magnetic field along the axis of a current carrying coil – Stewart and Gee's apparatus.
14. Energy Band gap of a Semiconductor p.n junction.
15. Hall Effect for semiconductor.

## REFERENCES:

1. Engineering Physics Lab Manual by Dr.Y. Aparna & Dr.K.Venkateswarao (V.G.S.Book links)
2. Physics Practical Manual, Lorven Publication

**Branch: EEE**

**I Year – II Semester**

**Regulation: R20**

**Sub. Title: WORKSHOP (ELECTRICAL & IT)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>3</b>	<b>1.5</b>

**Sub.Code:**

**PART-A**

**ELECTRICAL WORKSHOP**

**Learning Objectives:**

1. To know about different tools, abbreviations and symbols in Electrical Engineering
2. To learn about different types of electrical components and measuring instruments.
3. To learn how to perform residential wiring and fluorescent lamp wiring.

**Syllabus:**

1. Study on Introduction to Electrical tools, symbols and abbreviations
2. Study of types of sizes of wires and making “T” joint and straight joint for wires
3. Identification of color code of resistors, Transistors, capacitors, diodes and Introduction to Multi meter & Power supply
4. Study and performance of residential wiring (using Energy meter, Fuses, Switches, Indicator, Lamps, etc.)
5. Study of Fluorescent lamp wiring
6. Measurement of wire gauges using gauge meter

**References:**

1. Lab manual of Electrical Engineering by TTTI, Chennai.

**Course Outcomes:**

1. Able to demonstrate knowledge on different tools, abbreviations and symbols used in Electrical Engineering
2. Able to measure different electrical quantities using measuring instruments
3. Able to perform wiring for residential houses.

## PART-B

### IT Workshop

**Task 1:** Identification of the peripherals of a computer - Prepare a report containing the block diagram of the computer along with the configuration of each component and its functionality. Describe about various I/O Devices and its usage and Practicing disassembling and assembling components of a PC.

**Task 2:** Demonstration and Practice of various features of Microsoft Word Assignment: 1. Create a project certificate. 2. Creating a news letter Features to be covered:-Formatting Fonts, Paragraphs, Text effects, Spacing, Borders and Colors, Header and Footer, Date and Time option, tables, Images, Bullets and Numbering, Table of Content, Newspaper columns, Drawing toolbar and Word Art and Mail Merge in word etc.,

**Task 3:** Demonstration and Practice of various features Microsoft Excel Assignment: 1. Creating a scheduler 2. Calculating GPA 3. Calculating Total, average of marks in various subjects and ranks of students based on marks Features to be covered:- Format Cells, Summation, auto fill, Formatting Text, Cell Referencing, Formulae in excel, Charts, Renaming and Inserting worksheets, etc.,

**Task 4:** Demonstration and Practice of various features Microsoft Power Point Features to be covered:- Slide Layouts, Inserting Text, Word Art, Formatting Text, Bullets and Numbering, Auto Shapes, Hyperlinks Tables and Charts, Master Layouts, Types of views, Inserting – Background, textures, Design Templates, etc.,

**Task 5:** Internet of Things (IoT): IoT fundamentals, applications, protocols, communication models, architecture, IoT devices.

**Task 6:** Basic HTML tags, Introduction to HTML5 and its tags, Introduction to CSS3 and its properties. Preparation of a simple website/ homepage, Assignment: Develop your home page using HTML Consisting of your photo, name, address and education details as a table and your skill set as a list. Features to be covered:- Layouts, Inserting text objects, Editing text objects, Inserting Tables, Working with menu objects, Inserting pages, Hyper linking, Renaming, deleting, modifying pages, etc.,



# VISHNU INSTITUTE OF TECHNOLOGY:: BHIMAVARAM

(Autonomous)

Approved by AICTE, Accredited by NAAC- A<sup>++</sup>, NBA & Affiliated to JNTUK, Kakinada

Department of Basic Science

Syllabus: I B.Tech-II Semester

(R-20 Regulations)

(Common to CSE, IT & EEE Branches)

**Course Title: Constitution of India**

**L T P C**

**2 0 0 0**

## Course Objectives:

- To train students in understanding the basic structure of Indian Constitution
- To prepare students to live better and happily with other fellow beings through the application of Fundamental Rights in their lives.

### UNIT-I: Introduction to Indian Constitution

Meaning of the term Indian Constitution –Preamble- Constituent Assembly- Salient Features of Indian Constitution

### UNIT-II: Fundamental Rights

Fundamental Rights -Fundamental Duties -The Directive Principles of State Policy

### UNIT-III: Union Government

Union Government -Union Legislature (Parliament) -Lok Sabha and Rajya Sabha (with Powers and Functions) -Union Executive -President of India (with Powers and Functions) -Prime Minister of India (with Powers and Functions) -Union Judiciary (Supreme Court) -Jurisdiction of the Supreme Court

### UNIT-IV State Government

State Government -State Legislature (Legislative Assembly / Vidhan Sabha, Legislative Council / Vidhan Parishad) -Powers and Functions of the State Legislature -State Executive-Governor of the State (with Powers and Functions) -The Chief Minister of the State (with Powers and Functions) -State Judiciary (High Courts)

### UNIT-V: Local Self Governance and Sovereign Bodies

Powers and functions of Municipalities, Panchyats, ZP's and Co – Operative Societies

Election Commission of India (with Powers and Functions) -The Union Public Service Commission (with Powers and Functions)

**Text Books:**

1. Introduction to constitution of India, Durga Das Basu, Lexis Nexis Publications
2. Constitution of India by PROFESSIONAL BOOK PUBLISHERS
3. The Constitution of India by Arun K Tiru vengadam, Blooms bury publishers.
4. The constitution of India by PM Bakshi, Universal law publishing co
5. The Constitution of India by S.R. Bhansali, Universal law publishing co

**Course Outcomes:**

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

1. Examine salient features of Indian Constitution and live accordingly in society.
2. Interpret the meaning of Fundamental Rights and Directive Principles of State Policy and, develop an attitude which paves the way for better living conditions.
3. Discover various aspects of Union Government legislation and live up to the expectations of the rules.
4. Critically examine State Government legislation and improve your living standards by following the rules strictly
5. Examine powers and functions of local bodies such as Municipalities and Panchayats and, take advantage of available resources for better living, and analyze the powers and functions of Election Commission and The Union Public Service Commission and decide upon it for safe and secured life.