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 Mechanical Engineering Department

To foster prosperity through technological development by means of education, innovation and collaborative research.

Mission of Mechanical Engineering Department

- To produce effective and responsible graduate and post-graduate engineers for global requirements by imparting quality education.
- To improve the Department's infrastructure to facilitate research productivity and success.
- To integrate teaching and research for preservation and effective application of knowledge and skills.
- To strengthen and expand collaboration and partnerships with industry and other organizations.
- To provide consultancy to the neighborhood and inculcate a spirit of entrepreneurship.
- To serve society through innovation and excellence in teaching and research.

Program Educational Objectives(PEOs)

PEO1: Graduates apply a deep working knowledge of technical fundamentals in areas such as Design, Thermal, Production, Industrial and related fields to address needs of the customer and society.

PEO2: Graduates pursue advanced education, Research and Development in Engineering, Technology and other professional careers.

PEO3: Perform themselves in a responsible, professional and ethical manner.

PEO4: Graduates participate as leaders in their fields of specialization and in activities that contribute to service and overall economic development of society.

Program Outcomes(POs) of Mechanical Engineering 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 (PSO's):

PSO1: Able to apply the knowledge learned as a part of the curriculum to provide solutions for problems related to Mechanical Engineering.

PS**O**2: Think innovatively, design and develop products with modern CAD/CAM tools and with optimized manufacturing processes.

ACADEMIC REGULATIONS

B.Tech. FOUR YEAR DEGREE COURSE

R19 Regulations

(Applicable for the batches admitted from 2019-2020)

VISHNU INSTITUTE OF TECHNOLOGY : BHIMAVARAM

(Autonomous)

Approved by AICTE & Affiliated to JNTUK, Kakinada
Accredited with 'A' Grade by NAAC & NBA

Vishnupur, Bhimavaram, West Godavari Dist., Andhra Pradesh, India. PIN - 534202

Email: info@vishnu.edu.in, Website: www.vishnu.edu.in

I-Year II-Semester

S.No	Course Title	L	T	P	C	I	E	T*
1	Mathematics–II (PDE & Vector Calculus)	2	1	-	3	40	60	100
2	Engineering Chemistry	3	-	-	3	40	60	100
3	Engineering Graphics and Design	2	-	3	3.5	40	60	100
4	Elements of Electrical & Electronics Engineering	3	-	-	3	40	60	100
5	Engineering Chemistry Lab			3	1.5	40	60	100
6	Electrical & Electronics Engineering Lab			3	1.5	40	60	100
7	Computer Programming Lab	-	-	3	1.5	40	60	100
8	Engineering Workshop	-	-	3	1.5	40	60	100
9	Environmental Science	3	-	-	-	0	0	0
	Total	13	1	15	18.5	320	480	900

I B.Tech-II Semester

MATHEMATICS-II

(PDE &VECTOR CALCULUS)

L	T	P	C
2	1	0	3

COURSE OBJECTIVES:

To enable the students to

1. Make the students learn modeling various physical phenomena as first and second order PDE
2. Learn techniques to solve as first and second order PDE.

UNIT-I: FIRST ORDER PARTIAL DIFFERENTIAL EQUATIONS

Formation of Partial differential equations by elimination of arbitrary constants and arbitrary functions– solutions of first order linear (Lagrange) equations and nonlinear equations-standard types

UNIT- II: HIGHER ORDER PARTIAL DIFFERENTIAL EQUATIONS

Solutions of Linear Partial differential equations with constant coefficients. RHS terms of the type $e^{ax + by}$, Sin(ax+by), Cos(ax+by), $x^m y^n$. Classification of second order partial differential equations-parabolic,elliptical and hyperbolic.

UNIT-III: APPLICATIONS OF PARTIAL DIFFERENTIAL EQUATIONS

Method of Separation of Variables-Applications to wave equation, heat conduction equation in one dimensions and Laplace equation in two dimensions

UNIT-IV: LAPLACE TRANSFORMS

Laplace transform-Definition-conditions for existence,– Linear Property -Shifting Theorems, Laplace transformof 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-V: 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-VI: 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.

COURSE OUTCOMES:

After completing this course, the students will be able to

1. model first order linear and non-linear partial differential equations and solve analytically
2. model higher order homogeneous & non homogeneous linear partial differential equations and solve analytically
3. model physical problems of engineering like steady and unsteady heat conduction, vibration of string.
4. use of Laplace transforms in solving the differential equations with the initial and boundary conditions.
5. understand electric and magnetic fields and their physical significance
6. compute line, surface and volume integrals and evaluate the work done, flux, potential functions

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

REFERENCEBOOKS:

1. T.K.V.Iyengar, B. Krishna Ghandhi, S. Ranganathan and M.V.S.S.N.Prasad, Engineering Mathematics, Volume-I, 12th Ed., S. Chand Publishers, 2014
2. B. V. Ramana, Engineering Mathematics, 4th Ed., Tata McGraw Hill, New Delhi, 2009
3. D. S. Chandrashekharaiah, Engineering Mathematics, Volume 1, Prism Publishers, 2010

4. N.P. Bali and Manish Goyal, A text book of Engineering Mathematics, Laxmi Publications, reprint, 2008

I B.Tech-II Semester

ENGINEERING CHEMISTRY

L	T	P	C
3	0	0	3

COURSE OBJECTIVES:

1. Plastics are nowadays used in household appliances; also they are used as composites in aerospace and automotive industries.
2. Fuels as a source of energy are a basic need of any industry, particularly industries like thermal power stations, steel industry, fertilizer industry etc., and hence they are introduced.
3. The basics for the construction of galvanic cells are introduced. Also if corrosion is to be controlled, one has to understand the mechanism of corrosion which itself is explained by electrochemical theory.
4. With the increase in demand, a wide variety of materials are coming up; some of them have excellent engineering properties and a few of these materials are introduced.
5. Water is a basic material in almost all the industries, more so where steam is generated and also where it is supplied for drinking purposes.
6. Materials used in major industries like steel industry, metallurgical industries and construction industries and electrical equipment manufacturing industries are introduced.

UNIT I: HIGH POLYMERS AND PLASTICS

Polymerization: Introduction- Methods of polymerization --Thermoplastics and Thermosetting plastics – Compounding and fabrication (4/5 techniques)- Preparation, properties and applications of polyethylene, PVC, Bakelite Teflon. Conducting polymers, Fiber Reinforced Plastics and Biodegradable Polymers.

Elastomers – Natural rubber - vulcanization – Synthetic rubbers : Buna S, Buna N and Thiokol – Applications of elastomers.

UNIT II: FUEL TECHNOLOGY

Fuels:- Introduction – Calorific value - HCV and LCV – Bomb calorimeter – Numerical problems – Coal — Proximate and ultimate analysis –Significance of the analyses – Liquid fuels – Petroleum- Refining – Cracking – Petrol knocking – Diesel knocking - Octane and Cetane ratings – Anti-knock agents –Gaseous fuels – Natural gas, LPG and CNG. Biofuels- Biodiesel and Power alcohol

UNIT III: ELECTROCHEMICAL CELLS AND CORROSION

Galvanic cells (Construction and working) – Electro chemical series and uses of this series- Standard electrodes (Hydrogen and Calomel electrodes) Batteries: Dry Leclanche Cell - Ni-Cd cells - Li cells.

Corrosion:-Definition – Theories of Corrosion (dry and wet) – Formation of galvanic cells by different metals, differential aeration - waterline corrosion – Pitting corrosion - Factors which influence the rate of corrosion - Protection from corrosion: Methods of application on metals (Galvanizing, Tinning, Electroplating, Electroless plating).

UNIT IV: CHEMISTRY OF ADVANCED MATERIALS

Nano materials:-Introduction- Top down and Bottom up approach – Carbon nano tubes and fullerenes: Characterization of nonmaterials by BET and TEM methods- self assembled layers- Types, Preparation (Arc discharge Laser ablation and Chemical Vapour Deposition methods) properties and applications.

Liquid crystals: - Introduction – Types – Applications

Superconductors: - Type-I& Type-II, properties &applications.

Green synthesis: -Principles – Aqueos phase method, Super critical fluid extraction and Biocatalytic methods of synthesis with examples.

UNIT V: WATER TECHNOLOGY

Hard water:units of hardness – Boiler troubles-Priming and foaming, Caustic embrittlement, Scale and Sludge formation - Softening of Hard water: Lime – Soda process, Zeolite process and Ion Exchange process Reverse Osmosis and Electro Dialysis.

Potable water- Sterilization and disinfection of water- Break point of chlorination- BIS and WHO standards.

UNIT VI: CHEMISTRY OF ENGINEERING MATERIALS AND FUEL CELLS

Refractories: - Definition, classification, properties of refractories.

Lubricants: - Definition and mechanism of lubricants.

Cement: - Constituents, manufacturing, setting and hardening of cement- Decay of cement.

Insulators: - Thermal and electrical insulators - Applications.

Fuel cells: - Hydrogen Oxygen fuel cells – Methanol Oxygen fuel cells.

COURSE OUTCOMES:

1. The advantages and limitations of plastic materials and their use in design would be understood.
2. Fuels which are used commonly and their economics, advantages and limitations are discussed.
3. Reasons for corrosion and some methods of corrosion control would be understood.
4. The students would be now aware of materials like nano materials and fullerenes and their uses. Similarly liquid crystals and superconductors are understood.
5. The importance of green synthesis is well understood and how they are different from conventional methods is also explained.
6. The impurities present in raw water, problems associated with them and how to avoid them are understood
7. The commonly used industrial materials are introduced.

TEXT BOOKS:

1. Engineering Chemistry by Jain and Jain; Dhanpat Rai Publicating Co.
2. Engineering Chemistry by Shikha Agarwal; Cambridge University Press, 2015 edition.

REFERENCE BOOKS:

1. Engineering Chemistry by PrasanthRath, Cengage Learning, 2015 edition.
2. A text book of engineering Chemistry by S. S. Dara; S. Chand & Co Ltd., Latest Edition

I B.Tech-II Semester

ENGINEERING GRAPHICS & DESIGN

L	T	P	C
2	0	3	3.5

COURSE OBJECTIVES:

1. Engineering drawing being the principle method of communication for engineers, the objective is to introduce the students, the techniques of constructing the various types of polygons, curves and scales.
2. The objective is also to visualize and represent the 3D objects in 2D planes with proper dimensioning, scaling etc.

UNIT – I

Objective: To introduce the students to use drawing instruments and to draw polygons, Engg. Curves.

Polygons: Construction of regular polygons by general methods, inscribing and describing polygons on circles.

Curves: Ellipse, Parabola and Hyperbola by general methods, Tangent & Normal, and Ellipse by Oblong Method and Arcs of Circles Method. Cycloids, Involutes, tangent & normal for the curves.

UNIT – II

Objective: To introduce the students to use scales and orthographic projections, projections of points & simple lines.

Scales: Plain scale, Diagonal scale and Vernier scale.

Orthographic Projections: Introduction to Projections,Horizontal plane, Vertical plane, Profile plane, importance of reference lines.

Projections of points in various quadrants.

UNIT – III

Objective: The objective is to make the students draw the projections of the lines inclined to both the planes.

Projections of straight lines inclined to one plane, inclined to both the planes, traces

UNIT – IV

Objective: The objective is to make the students draw the projections of the plane inclined to both the planes.

Projections of planes: inclined to one reference plane; inclined to both the reference planes.

UNIT – V

Objective: The objective is to make the students draw the projections of the various types of solids in different positions inclined to one of the planes.

Projections of Solids – Projections of Prisms, Pyramids, Cones and Cylinders simple positions, the axis inclined to one of the reference planes and axis inclined to both the reference planes.

UNIT – VI

Objective: The objective is to represent the object in 3D view through isometric views. The student will be able to represent and convert the isometric view to orthographic view and vice versa.

Conversion of isometric views to orthographic views;

Conversion of orthographic views to isometric views.

COURSE OUTCOMES:

Upon successful completion of this course, the student shall be able to:

1. Understand and construct the polygons and curves in engineering applications.
2. Visualize objects in 3D space and draw Orthographic Projections.

3. Interpret Orthographic and Isometric views of objects.

TEXT BOOKS:

1. Engineering Drawing by N.D. Bhatt, Charotar Publishing House Pvt. Ltd
2. Engineering Drawing by Agarwal & Agarwal, Tata McGraw Hill
3. Engineering Drawing + AutoCAD by K. Venugopal, V. Prabhu Raja, New Age

REFERENCE BOOKS:

1. Engineering Drawing by K.L.Narayana& P. Kannaiah, Scitech Publications
2. Engineering Graphics for Degree by K.C. John, PHI Learning
3. Engineering Graphics by PI Varghese, McGrawHill Publishers.
4. Engineering Drawing by P.S. Gill, S.K. Kataria& Sons

I B.Tech-II Semester

ELEMENTS OF ELECTRICAL & ELECTRONICS ENGINEERING

L	T	P	C
3	0	0	3

PREREQUISITE:

1. This course covers the topics related to analysis of various electrical circuits, operation of various electrical machines, various electronic components to perform well in their respective fields.

COURSE OBJECTIVES:

1. To learn the basic principles of electrical circuital law's and analysis of networks.
2. To understand the principle of operation and construction details of DC machines & Transformers.
3. To understand the principle of operation and construction details of alternator and 3-Phase inductionmotor.
4. To study the operation of PN junction diode, half wave, full wave rectifiers andOP-AMPs.
5. To learn the operation of PNP and NPN transistors and various amplifiers.

UNIT – I

Electrical Circuits: Basic definitions - Types of network elements - Ohm's Law - Kirchhoff's Laws - Inductive networks -Capacitive networks – Series - Parallel circuits - Star-delta and delta-star transformations.

UNIT – II

Dc Machines:

Principle of operation of DC generator – EMF equation - Types of DC machine – Torque equation – Applications– Three point starter - Speed control methods of DC motor – Swinburne's Test.

UNIT – III

Transformers: Principle of operation and construction of single phase transformers – EMF equation – Losses – OC & SC tests - Efficiency and regulation.

UNIT – IV

AC Rotating Machines: Principle of operation and construction of alternators– Types of alternators – Principle of operation of synchronous motor - Principle of operation of 3-Phase induction motor – Slip-torque characteristics - Efficiency – Applications.

UNIT – V

Rectifiers & Linear ICs:PN junction diodes - Diode applications(Half wave and bridge rectifiers). Characteristics of operation amplifiers (OP-AMP) - application of OP-AMPs (inverting, non-inverting, integrator and differentiator).

UNIT – VI

Transistors:PNP and NPN junction transistor, transistor as an amplifier- Transistor amplifier - Frequency response of CE amplifier - Concepts of feedback amplifier.

COURSE OUTCOMES:

1. Able to analyse the various electrical networks.
2. Able to understand the operation of DC generators,3-point starter and DC machine testing bySwinburne's Test.
3. Able to analyse the performance of single-phase transformer.
4. Able to explain the operation of 3-phase alternator and 3-phase induction motors.
5. Able to analyse the operation of half wave, full wave bridge rectifiers and OP-AMPs.
6. Able to explain the single stage CE amplifier and concept of feedback amplifier.

TEXT BOOKS:

1. Electrical Technology by Surinder Pal Bali, Pearson Publications.
2. Electronic Devices and Circuits, R.L. Boylestad and Louis Nashelsky, 9th edition, PEI/PHI 2006.

REFERENCE BOOKS:

1. Electrical Circuit Theory and Technology by John Bird, Routledge Taylor &Francis Group
2. Basic Electrical Engineering by M.S.Naidu and S.Kamakshiah,TMH Publications
3. Fundamentals of Electrical Engineering by Rajendra Prasad, PHI Publications,2nd edition
4. Basic Electrical Engineering by Nagsarkar,Sukhija, Oxford Publications,2nd edition
5. Industrial Electronics by G.K. Mittal, PHI

I B.Tech-II Semester

ENGINEERING CHEMISTRY LAB

L	T	P	C
0	0	3	1.5

COURSE OBJECTIVES:

1. To verify the fundamental concepts with experiments.
2. The experiments have been chosen to develop skill among the students so that they can measure,differentiate and analyze the best results.
3. This will help them to solve the engineering problems in their world of work.
4. To enhance the thinking capabilities in line with the modern trends in engineering andtechnology.

LIST OF EXPERIMENTS:

1. Trial experiment - Determination of HCl using standard Na_2CO_3 solution.
2. Determination of alkalinity of a sample containing Na_2CO_3 and NaOH.
3. Determination of $KMnO_4$ using standard Oxalic acid solution.
4. Determination of Copper using standard $K_2Cr_2O_7$ solution.
5. Determination of temporary and permanent hardness of water using standard EDTA solution.
6. Determination of Vitamin – C
7. Determination of P^H of the given sample solution using P^H meter.
8. Conductometric titration between strong acid and strong base.
9. Potentiometric titration between strong acid and strong base.
10. Estimation of copper by Colorometry
11. Estimation of KCl by Ion exchange resin method.
12. Photo Chemical Reduction of Ferric Salt (Blue-Printing)
13. Adsorption of acetic acid on charcoal.
14. Determination of rate of corrosion.
15. Preparation of a polymer.

COURSE OUTCOMES:

1. The experiments introduce volumetric analysis; redox titrations with different indicators; EDTA titrations.
2. Exposed to a few instrumental methods of chemical analysis.
3. The student is exposed to different methods of chemical analysis and use of some commonlyemployed instruments.
4. Conductance phenomenon is better understood.

REFERENCE BOOKS:

1. A Textbook of Quantitative Analysis, Arthur J. Vogel.
2. Dr. Jyotsna Cherukuris (2012) Laboratory Manual of engineering chemistry-II, VGSTechno Series
3. Chemistry Practical Manual, Lorven Publications
4. Practical Engineering Chemistry, K. Mukkanti (2009) B.S. Publication

I B.Tech-II Semester

ELECTRICAL & ELECTRONICS ENGINEERING LAB

L	T	P	C
0	0	3	1.5

The following experiments are required to be conducted as compulsory experiments:

SECTION A: ELECTRICAL ENGINEERING:

1. Verification of Kirchoffs Laws
2. Verification of Superposition Theorem.
3. Swinburne's test on D.C. Shunt machine (Predetermination of efficiency of a given D.C. Shunt machine working as motor and generator).
4. OC and SC tests on single phase transformer (Predetermination of efficiency and regulation at given powerfactors).
5. Speed control of D.C. Shunt motorby
   a) Armature Voltage control
   b) Field flux controlmethod
6. Brake test on D.C. Shunt Motor.

SECTION B: ELECTRONICS ENGINEERING:

1. PN junction Diode characteristics A. Forward bias, B. Reverse bias. (Cut in voltage & Resistancecalculations)
2. Transistor CE Characteristics (Input and Output).
3. Full wave Rectifier with and withoutfilters.
4. CEAmplifiers.

I B.Tech-II Semester

COMPUTER PROGRAMMING LAB

L	T	P	C
0	0	3	1.5

COURSE OBJECTIVES:

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

PROGRAMMING

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) 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 of 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 Usingswitch...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 ofsin x and cos x and e^x values using Seriesexpansion. (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 sum of n elements entered by user. To perform this program, allocate memory dynamically using malloc () function.
b) Write a C program to find sum of n elements entered by 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

Exercise -13 Files

a) Write a C programming code to open a file and to print it contents on screen.
b) Write a C program to copy files

Exercise - 14 Files Continued

a) Write a C program merges two files and stores their contents in another file.
b) Write a C program to delete a file.

COURSE OUTCOMES:

1. Apply and practice logical ability to solve the problems.
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 in-built functions and customized functions for solving the problems.
5. Understand and apply the pointers, memory allocation techniques and use of files for dealing with variety of problems.
6. Document and present the algorithms, flowcharts and programs in form of user-manuals
7. Identification of various computer components, Installation of software

NOTE:

1. All the Programs must be executed in the Linux Environment. (Mandatory)
2. The Lab record must be a print of the LATEX (.tex) Format.

I B.Tech-II Semester

ENGINEERING WORKSHOP

L	T	P	C
0	0	3	1.5

Note: At least two exercises to be done from each trade.

TRADES:

Carpentry

1. T-Lap Joint
2. Cross Lap Joint
3. Dovetail Joint
4. Mortise and Tenon Joint

Fitting

1. Vee Fit
2. Square Fit
3. Half Round Fit
4. Dovetail Fit

Black Smithy

1. Round rod to Square
2. S-Hook
3. Round Rod to Flat Ring
4. Round Rod to Square headed bolt

House Wiring

1. Parallel / Series Connection of three bulbs
2. Stair Case wiring
3. Florescent Lamp Fitting
4. Measurement of Earth Resistance

Tin Smithy

1. Taper Tray
2. Square Box without lid
3. Open Scoop
4. Funnel

I B.Tech-II Semester

ENVIRONMENTAL SCIENCE

L	T	P	C
3	0	0	0

COURSE OBJECTIVES:

1. To make the students to get awareness on environment, to understand the importance of protecting natural resources, ecosystems for future generations and pollution causes due to the day to day activities of human life to save earth from the inventions by the engineers.

UNIT-I

MULTIDISCIPLINARY NATURE OF ENVIRONMENTAL SCIENCE AND ECOSYSTEMS:

Definition, Scope and Importance and sustainability – Need for public awareness- Human population and Environment.

Ecosystems: Concept of an ecosystem. - Structure and function of an ecosystem. – Types of ecosystems- Forest, Grassland, Desert and Aquatic ecosystems- Food chains, food webs and ecological pyramids.

UNIT – II NATURAL RESOURCES:

Forest resources: Use and over – exploitation, deforestation – Timber extraction – Mining, dams and other effects on forest and tribal people

Water resources: Conflicts over water, dams – benefits and problems

Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources.

Energy resources: Growing energy needs- renewable and non-renewable energy sources.

Food resources – World food problems

Land resources- Wasteland reclamation.

Role of an individual in conservation of natural resources.

UNIT – III BIODIVERSITY AND ITS CONSERVATION:

Definition: Genetic, species and ecosystem diversity- classification - Value of biodiversity: consumptive use, productive use, social - Biodiversity at national and local levels. Hot-spots of biodiversity - Threats to biodiversity - Endangered and endemic species of India - conservation of biodiversity.

UNIT – IV ENVIRONMENTAL POLLUTION:

Definition, Cause, effects and control measures of Air pollution, Water pollution, Soil pollution, Noise pollution, Nuclear hazards. Role of an individual in prevention of pollution. - Pollution case studies.

Solid Waste Management: Sources, effects and control measures of urban and industrial solid wastes.Biomedical and e - waste management.

Global Environmental Challenges: Global warming and climate change, acid rains, ozone layer depletion.

UNIT – V SOCIAL ISSUES AND THE ENVIRONMENT:

Urban problems related to energy -Water conservation, rain water harvesting-Resettlement and rehabilitation of people. Environmental Protection Act –Air Act. –Water Act - Wildlife Protection Act -Forest Conservation Act- Public awareness.

International protocols: Stockholm and Rio Summit, Kyoto protocol and Montreal protocol.

UNIT – VI ENVIRONMENTAL MANAGEMENT:

Impact Assessment and its significance - various stages of EIA- Environmental audit, Ecotourism.

Student visit of an Industry / Ecosystem.

COURSE OUTCOMES:

Students will be able to

1. Articulate the basic structure, functions, and processes of key social systems affecting the environment.
2. Explain how Natural resources should be used.

3. Identify the threats to biodiversity.
4. Understand Causes, effects and control measures of environmental pollution.
5. Gain knowledge about watershed management and environmental ethics.
6. Gain a rigorous foundation in various scientific disciplines as they apply to environmental science, such as ecology, evolutionary biology, hydrology, and human behavior.

TEXT BOOKS:

1. A Textbook of Environmental Studies, Shaashi Chawla, TMH, New Delhi.
2. Textbook of Environmental Studies for Undergraduate Courses by ErachBharucha for University Grants Commission.
3. Environmental Studies, R. Rajagopalan, 2nd Edition, 2011, Oxford University Press.

REFERENCE BOOKS:

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