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 ECE Department

In pursuit of world class excellence in the field of Electronics& Communication Engineering by imparting quality education and promoting Research.

Mission of ECE Department

- To empower students with knowledge and competencies in the field of Electronics & Communication Engineering conforming to International standards.
- To produce creative solutions essential to local and global needs in the field of Electronics & Communication Engineering.
- To mould the students professionally with a consciousness of moral values and professional ethical code**.**

Program Educational Objectives (PEOs) of ECE Department

PEO1: To provide world class Education in the principles of engineering that incorporate open ended design experience and the use of software and hardware tools related to Electronics and Communication Engineering and hence improve the employability skills of the student.

PEO2: To make the students able to function with multi-disciplinary teams that will enhance the leadership qualities and to formulate and solve engineering problems as a team which helps the student to adopt better professional conduct.

PEO3: To provide learning environment that provides open interaction for the students with faculty and staff that makes them innovative and dynamic and encourages research and motivate them to solve the problems of the society.

Program Outcomes (POs) of ECE 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 ECE Department

1. Will be equipped with knowledge of innovative, dynamic complete design flow specialized in implementation of projects pertaining to communication system, signal processing, digital and analog IC design, embedded systems and will integrate all areas to illustrate the goal of digital India.
2. Will have the ability to analyze, design electronics and communication applications using software tools like, pSpice, XYLINX, MATLAB, Mentor Graphics and other related software's.
3. Can demonstrate the principles of semiconductor devices, digital system, Microprocessor and microcontrollers, signal processing, antenna design in fields of consumer electronics, medical, defence and spacecraft electronics industry.
4. Will have strong ethical moral values and sound fundamental foundation of technical knowledge in all core subjects which help them to explore scientific theories, ideas, methods and technologies that help in solving current and future universal societal problems through Assistive Technology Laboratory as a flat form.

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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)

L	T	P	C
3	0	0	3

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, 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

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. makeuse 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-II Semester

(R-20 Regulations)

(ECE Branch)

Course Title: Applied Chemistry

L	T	P	C
3	0	0	3

Course Objectives:

1. To gain the knowledge on Polymer based materials in household appliances, aerospace and automotive industries.
2. To learn the basic principles and applications of Electrochemistry.
3. Advanced Analytical instrumental techniques are introduced for material characterization.With the increase in demand for power and also with depleting sources of fossil fuels, the demand for alternative sources of fuels is increasing. Some of the prospective fuel sources are introduced.
4. Understanding of crystal structures and preparation of semiconductors and insulators.
5. A wide variety of materials are coming up; some of them have excellent engineering properties and a few of these materials are introduced.

UNIT- I: Polymer Chemistry

Introduction to polymers, functionality of monomers, copolymerization, Stereospecific polymerization with specific examples.

Plastics - Thermoplastics and Thermosetting, Preparation, Properties and Applications of–Bakelite, Urea-Formaldehyde, Nylon-6,6, Carbon fibres.

Elastomers–Buna-S, Buna-N–Preparation, Properties and Applications.

Conducting polymers - polyacetylene, polyaniline, polypyrroles – Mechanism of conduction and applications

UNIT -II: Electrochemistry and Applications

Electrodes –Reference electrodes (Hydrogen electrode and Calomel electrode), Electrochemical cell, Nernst equation.Concept of pH, pH meter and applications of pH metry, Potentiometry- Potentiometric titrations (Redox titrations), Concept of Conductivity, Conductivity cell, Conductometric titrations (acid-base titrations).

Primary cells – Dry cell - Zinc-air battery, Secondary cells – Lead acid battery, Lithium-ion batteries-working of the batteries including cell reactions, and button cells.

Fuel cells - Hydrogen-Oxygen and Methanol-Oxygen fuel cells – working of the cells.

UNIT-III: Instrumental Methods AndNon-Conventional Energy Sources

Part-A:Instrumental Methods

Electromagnetic Spectrum. Absorption of radiation: Beer-Lambert's law - Principles of UV-Visible, Infrared (IR) and Nuclear Magnetic Resonance (NMR) spectroscopy.

Basic concepts of Thin Layer Chromatography (TLC), Gas Chromatography (GC) and HighPerformance Liquid Chromatography (HPLC), Separation and purification of mixture of compounds.

Part-B: Non-Conventional Energy Sources

Introduction – Renewable and Non –Renewable energy sources - Solar Energy- Introduction, application of solar energy – photovoltaic cell: design, working and its importance.Hydropower includes setup a hydropower plant (schematic diagram), Geo-Thermal energy: Introduction-schematic diagram of a geothermal power plant, Tidal power - Introduction- Design and working, Biomass energy.

UNIT -IV: Solid State Chemistry

Types of solids – Crystal defects- Frenkel and Schottky defects – Spinel and Inverse spinel.

Hall Effect and Applications.

Semiconductors:Preparation of pure semiconductors by Zone refining, Distillation and Czochralskicrystal pulling technique- Doping- Epitaxy, Diffusion and Ion-implantation technique. Intrinsic and Extrinsic semiconductors - Applications.

Insulators*:* Electrical Insulators and theirApplications.

UNIT - V: Material Chemistry

Nano materials –Introduction- Top- down and Bottom -up approaches, Sol-gel method. Characterization by BET and TEM methods.Carbon nano tubes and fullerenes - 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 chemistry- Principles and Applications.

Text Books:

1 Engineering Chemistry by Jain and Jain; Dhanpat Rai Publication Co.

2 Engineering Chemistry by Shikha Agarwal; Cambridge University Press, 2015 edition.

References:

1 Engineering Chemistry by Prasanth Rath, Cengage Learning, 2015 edition.

2 A text book of Engineering Chemistry by S. S. Dara; S. Chand & Co Ltd., Latest Edition.

3 Skoog and West, Principles of Instrumental Analysis, 6/e, Thomson, 2007.

4 A text book of Engineering Chemistry bySashiChawla, Dhanpat Rai & Co. 2017

Course Outcomes:

After completing the course, students will be able to

1. Recall the information related to polymers and their application.(Remembering)
2. Distinguish between different parts in electrochemical cell, batteries and fuel cells. (Analyzing)
3. Understand about the different analytical techniques and its applications.(Understanding)
   Design the technologies related to renewable energy sources. (Creating)
4. Understand the conductivity phenomenon and applications of solids.(Understanding)
5. Choose the materials like nano materials, liquid crystals, superconductors, and green synthetic methods to solve the Engineering problems. (Applying)

Branch: ECE **I Year – II Semester**

Regulation: R20

Sub. Title: NETWORKS & ELECTRICAL TECHNOLOGY

Sub.Code:

L	T	P	C
3	0	0	3

Learning Objectives:

- To understand the basic concepts and analysis of DC Circuits and Network Theorems
- To understand the concepts and analysis of various types of AC Circuits
- To understand the concepts of DC transients and two port network concepts
- To understand the principles of operation and characteristics of DC machines.
- To understand the principle of operation of AC Machines and special electrical machines

UNIT – I

DC Circuits: Basic introduction to Electrical Energy sources and network elements- Series and Parallel circuits, Star-Delta conversion, Kirchhoff's laws, Mesh analysis, Nodal analysis- Numeric problems solving with resistances only with independent sources.

Network Theorems (DC Excitation): Superposition, Thevenin's, Norton's, Reciprocity, Max Power Transfer theorems-problem solving using independent sources

UNIT – II

AC Circuits: Definitions of alternating quantities- Response of network elements to sinusoidal excitation, phase angle, series R-L, R-C, R-L-C circuits-problems, Introduction to three phase, phase sequence, relation between line and phase voltages and currents.

Coupled Circuits: Self-inductance, Mutual inductance, Coefficient of coupling, analysis of coupled circuits, Natural current, Dot rule of coupled circuits, conductively coupled equivalent circuits- problems

Resonant Circuits: Series and parallel resonance, frequency-response of series and Parallel circuits, Q–Factor, Bandwidth.

UNIT – III

DC Transients: Transient response of R-L, R-C, R-L-C circuits for DC excitations, Solution using differential equations.

Two-port Networks : Concept of two port networks, Z-parameters, Y-parameters, Transmission line parameters, h-parameters, Relationship between parameter sets, Cascading of two port networks, series connection and Parallel connection.

UNIT - IV

DC Machines: Constructional details of DC Machine **–**Classification of DC machines. Principle of operation of DC generator – EMF equation--- Magnetization Characteristics of DC shunt Generator-Principle operation of DC motor – applications – Torque equation-three point starter, speed control methods.

UNIT – V

Transformers: Principle of operation of single phase transformers, EMF equation, losses, efficiency and regulation.

AC Machines: Principle and operation of 3-phase Induction Motor and 3-phase Synchronous Generator.

Special Electrical Machines: Principle of Operation of Stepper motors **and Permanent** magnet brushless DC motors.- Applications

Course Outcomes:

- Able to solve the various types DC circuits by applying different network techniques and Network Theorems
- Able to analyze various types of AC Circuits
- Able to analyze different types DC transient circuits and two port networks
- Able to analyze the performance of DC machines
- Able to analyze the performance of AC Machines and Special electrical machines.

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TEXT BOOKS:

1. Electric Circuit Analysis by Hayt and Kimmarle, TMH
2. Special electrical Machines, K.VenkataRatnam, University press, New Delhi.
3. Electrical Machines by D. P.Kothari, I .J .Nagarth,McGrawHill Publications, 4th edition.

REFERENCE BOOKS:

1. Network Analysis – ME Van Valkenburg, Prentice Hall of India, Reviced 3rd Edition, 2019
2. Introductory Circuit Analysis by Robert L Boylestad, Pearson Publications
3. Circuits and Network: Analysis and Synthesis by A sudhakar and Shyammohan S Palli, McGrawHill Publications
4. Circuit Theory Analysis and Synthesis by AbhijitChakrabarthi,DhanpaiRai& Co Publications
5. Theory and performance of Electrical machines, J.B.Gupta,3rd edition, Kataria. S.K & Sons.
6. Electrical Machines by R.K.Rajput, Lakshmi publications, 5th edition.

I Year - II Semester

SEMICONDUCTOR DEVICES AND CIRCUITS

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L	T	P	C
3	0	0	3

Objectives:

The main objectives of this course are:

- Study the physical phenomena such as conduction, transport mechanism and electrical characteristics of different diodes.
- The application of diodes as rectifiers with their operation and characteristics with and without filters are discussed.
- The principal of working and operation of Bipolar Junction Transistor and Field Effect Transistor and their characteristics are explained.
- The need of transistor biasing and its significance is explained. The quiescent point or operating point is explained.
- Small signal equivalent circuit analysis of BJT and FET transistor amplifiers in different configuration is explained.

Syllabus:

UNIT- I: Junction Diode Characteristics : Open circuited p-n junction, law of junction, current components in PN junction Diode, diode equation, V-I Characteristics, temperature dependence on V-I characteristics, Diode resistance, Diode capacitance, energy band diagram of PN junction Diode.

Special Semiconductor Diodes: Zener Diode, Breakdown mechanisms, LED, Photo diode, Tunnel Diode, UJT. Construction, operation and characteristics of all the diodes are required to be considered.

UNIT- II: Rectifiers and Filters: Basic Rectifier setup**,** half wave rectifier, full wave rectifier, bridge rectifier, derivations of characteristics of rectifiers, rectifier circuits-operation, input and output waveforms, Filters, Inductor filter, Capacitor filter, comparison of various filter circuits in terms of ripple factors.

UNIT- III: Transistor Characteristics:

BJT: Introduction to transistor, Operating modes of transistor, transistor current components, transistor configurations, transistor as an amplifier, characteristics of transistor in Common Base, Common Emitter and Common Collector configurations, punch through/ reach through, typical transistor junction voltage values.

FET: FET types, construction, operation, characteristics, parameters, MOSFET-types, construction, operation, characteristics, comparison between JFET and MOSFET.

UNIT- I V: Transistor Biasing and Thermal Stabilization : Need for biasing and operating point, load line

analysis, Stability factors, (S, S , S), BJT biasing methods, fixed bias, collector to base bias, self bias, Stabilization against variations in V_{BE}, Ic, and β, Thermal runaway avoid

condition. FET Biasing- methods and stabilization.

UNIT- V: Small Signal Low Frequency Transistor Amplifier Models:

BJT: Two port network, Transistor hybrid model, determination of h-parameters, conversion of h-parameters, generalized analysis of transistor amplifier model using h-parameters, Analysis of CB, CE and CC amplifiers using exact and approximate analysis, Comparison of transistor amplifiers.

FET: Generalized analysis of small signal model, Analysis of CG, CS and CD amplifiers, comparison of FET amplifiers.

Text Books:

1. Electronic Devices and Circuits- J. Millman, C. Halkias, Tata Mc-Graw Hill, Second Edition.
2. Integrated Electronics- Jacob Millman, C. Halkies, C.D.Parikh, Tata Mc-Graw Hill, 2009.

References:

1. Electronic Devices and Circuits-Salivahanan, Kumar, Vallavaraj, Tata Mc-Graw Hill, Second Edition
2. Electronic Devices and Circuits – A.P.Godse, U.A.Bakshi, Technical publications.

Outcomes:

At the end of this course the student can able to:

- Understand the formation of p-n junction and how it can be used as a p-n junction as diode in different modes of operation.
- Know the construction, working principle of rectifiers with and without filters with relevant expressions and necessary comparisons.
- Understand the construction, principle of operation of transistors, BJT and FET with their V-I characteristics in different configurations.
- Know the need of transistor biasing, various biasing techniques for BJT and FET and stabilization concepts with necessary expressions.
- Perform the analysis of small signal low frequency transistor amplifier circuits using BJT and FET in different configurations.

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Year/Semester	I B. Tech/IISem	L	T	P	C
Regulation Year	2020-21	1	0	4	3
Subject	C and Data Structures				
Branch	ECE				

Course Objectives:

- To design & develop C programs using selection and repetition control statements
- To design & develop C programs using arrays and strings
- To design & develop C programs using structures, unions, pointers
- To design & develop modular programs using functions
- To design & develop C programs using Stacks, Queues and Linked Lists

Course Outcomes:

By the end of the course, the students should be able to:

- Use the appropriate control statements to write programs for the given task
- Write programs using arrays and strings
- Use structures, unions and pointers in programming
- Write programs using modular programming
- Write programs using the appropriate data structures such as Stacks, Queues and Linked Lists

Unit-1

Introduction to the C Language: C Programming Basics: Identifiers, Types, Variable, Constants, Input/output, Operators, Expression Evaluation, Control Statements - Decision Control, Repetition Control, break, continue, Exercise programs covering these concepts

Unit-2

Derived Datatypes: Arrays, Two Dimensional Arrays, Multidimensional Arrays, Programming Examples, Strings: String Concepts, C String, String Input / Output Functions, Predefined string handling functions, Exercise programs covering these concepts

Unit-3

Structures: Definition, Variable declaration and initialization, Programming Examples, Nested Structures, Unions, Difference between Structure and Union, Pointers - Declaration & initialization, Operations on pointers, Exercise programs covering these concepts

Unit-4

Functions: Definition, Declaration, Function call, Predefined vs. User defined Functions, return statement, Types of functions, Parameter passing techniques – Call by value and Call by reference, Recursion, Exercise programs covering these concepts

Unit-5

Data Structures: Definition, Linear vs. Non-linear data structure, Stack representation using arrays, applications of stacks, Queue representation using arrays, applications of queues, Linked Lists, Types of Linked Lists, Operations on Singly Linked Lists, Exercise programs covering these concepts

Text Books:

1) Programming for Problem Solving, Behrouz A. Forouzan, Richard F.Gilberg, CENGAGE.
2) The C Programming Language, Brian W.Kernighan, Dennis M. Ritchie, 2e, Pearson
3) Data Structures using C, E Balagurusamy, Mcgraw Hill

SEMICONDUCTOR DEVICES AND CIRCUITS LAB

IYear - II Semester

L T P C

0 0 3 1.5

Electronic Workshop Practice:

1. Identification, Specifications, Testing of R, L, C Components (Colour Codes), Potentiometers, Bread Boards.

2. Identification, Specifications and Testing of active devices, Diodes, BJTs, JEETs, LEDs, LCDs, SCR, UST.

3. Study and operation of Ammeters, Voltmeters, Transformers, Analog and Digital Multimeter, Function Generator, Regulated Power Supply and CRO.

List of Experiments: (Minimum of Ten Experiments has to be performed)

1. P-N Junction Diode Characteristics Part A: Germanium Diode (Forward bias& Reverse bias) Part B: Silicon Diode (Forward Bias only)
2. Zener Diode Characteristics Part A: V-I Characteristics Part B: Zener Diode as Voltage Regulator
3. Half-wave Rectifier(without and with c-filter)
4. Full-wave Rectifier(without and with c-filter)
5. BJT Characteristics(CB Configuration) Part A: Input Characteristics Part B: Output Characteristics
6. BJT Characteristics(CE Configuration) Part A: Input Characteristics Part B: Output Characteristics
7. FET Characteristics(CS Configuration) Part A: Drain Characteristics Part B: Transfer Characteristics
8. UJT Characteristics
9. Transistor Biasing
10. BJT-CE Amplifier
11. Emitter Follower-CC Amplifier

Equipment Required:

Regulated Power supplies

Analog/Digital Storage Oscilloscopes

Analog/Digital Function Generators

Digital Multimeters

Decade Résistance Boxes/Rheostats Decade Capacitance Boxes

Ammeters (Analog or Digital) & Voltmeters (Analog or Digital)

Active & Passive Electronic Components

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Department of Basic Science

Syllabus: I B.Tech-II Semester

(R-20 Regulations)

(ECE Branch)

Course Title: Applied Chemistry Lab

L	T	P	C
0	0	3	1.5

10 Out of 16

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. Estimation of MnO2 in Pyrolusite.
5. Determination of Copper using standard $K_2Cr_2O_7$ solution.
6. Determination of temporary and permanent hardness of water using standard EDTA solution.
7. Determination of Vitamin – C.
8. Determination of P^H of the given sample solution using P^H meter.
9. Conductometric titration between strong acid and strong base.
10. Potentiometric titration between strong acid and strong base.
11. Estimation of copper by Colorimetry.
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.
16. Thin layer chromatography.

References:

1. A Textbook of Quantitative Analysis, Arthur J. Vogel.
2. Dr. Jyotsna Cherukuri (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.

Outcomes:

The students entering into the professional course have practically very little exposure to lab classes. The experiments introduce volumetric analysis; redox titrations with different indicators; EDTA titrations; then they are exposed to a few instrumental methods of chemical analysis. Thus, at the end of the lab course, the student is exposed to different methods of chemical analysis and use of some commonly employed instruments. They thus acquire some experimental skills.

I B.Tech II Semester

ENGINEERING WORKSHOP LAB

ECE

L	T	P	C
0	0	3	1.5

COURSE OBJECTIVES:

- To develop a skill in dignity of labour, precision, safety at work place, team working and development of right attitude.
- To acquire skills in basic engineering practice
- To identify the hand tools and instruments
- To gain measuring skills
- To develop general machining skills in the students

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

COURSE OUT COMES:

The student will be able to:

1. Know the importance of general safety precautions on different• shop floors.
2. Identify the basics of tools and equipments used in fitting,• carpentry, sheet metal, machine, welding and smithy.
3. Fabrication of wooden joints and understand joining of metals.
4. Make metal joints and sheet metal work.
5. Understand the basics of removal of material from work piece surface to attain specific shape.
6. Familiarize with the production of simple models in fitting, carpentry, sheet metal, machine, welding and smithy trades.

TEXT BOOKS:

1. Workshop Technology Vol I & II/ S K Hajra Choudhury, A K Hajra Choudhury, N. Roy/ Media Promoters & Publishers Pvt. Ltd.

2. Workshop Practice/H S Bawa/ McGraw Hill Education; 2nd edition

REFERENCE BOOKS:

1. Work shop Manual / P.Kannaiah/ K.L.Narayana/ SciTech Publishers.

2. Engineering Practices Lab Manual/Jeyapoovan, Saravana Pandian, 4/e Vikas

3. Dictionary of Mechanical Engineering/GHF Nayler/Jaico Publishing House

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Department of Basic Science

Syllabus: I B.Tech-II Semester

(R-20 Regulations)

(Common to ECE, CE, ME,AI&DS, CS&BS)

Course Title: Environmental Science

Objectives:

To make the student to get awareness on environment, to understand the important of protecting natural recourses, ecosystems for futures generations and pollution causes due to the day to day activates 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 – Sustainability: Need for public awareness-Human population and Environment.

Ecosystems:Concept of an ecosystem. - Structure and function of an ecosystem. -Types of Ecosystem-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 use, 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. Bio medical and e-waste management.

Global Environmental Challenges: Global warming and climate change-Acid rains, Ozone layer depletion.

UNIT – V: Social Issues and Environmental Management

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.

Impact Assessment and its significance various stages of EIA, Environmental audit, Ecotourism. The student should Visit an Industry / Ecosystem.

Text Books

1. A Textbook of Environmental Studies, Shashi Chawla, TMH, NewDelhi.
2. Textbook of Environmental Studies for Undergraduate Courses by ErachBharucha for University Grants Commission.
3. Environmental Studies, R. Rajagopalan, 2nd Edition, 2011, Oxford UniversityPress

References

1. Environmental Studies, K. V. S. G. Murali Krishna, VGS Publishers,Vijayawada.
2. Text Book of Environmental Studies, DeekshitaDave& P. Udaya Bhaskar, Cengage Learning.
3. Textbook of Environmental Science and Technology – Dr. Anji Reddy, BS Publications.
4. Environment Studies, Anubha Kaushik, C P Kaushik, New Age International Publishers,2014.
5. Environmental Studies, P. N. Palanisamy, P. Manikandan, A. Geetha, and K. Manjula Rani; Pearson Education,Chennai.
6. Environmental Studies, Benny Joseph, Tata McGraw Hill Co, NewDelhi.

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 Recourses 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.Gain a rigorous foundation

in various scientific disciplines as they apply to environmental science, such as ecology, evolutionary biology, hydrology, and human behavior.