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.

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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)

(Common to CE & ME)

Course Title:Engineering 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. Relate the need of fuels as a source of energy to industries like thermal power stations, steel, fertilizer industry etc., and hence introduced.
3. To learn the basic principles and applications of Electrochemistry.To understand the mechanism of corrosion and how it can be prevented.
4. Explain the importance and usage of water as basic material in almost all the industries; interpret drawbacks of steam boilers and also how potable water is supplied for drinking purposes.
5. To train the students on the principles and applications of Cement, Refractories and Lubricants.

UNIT -I: Polymer Chemistry

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

Plastics - Thermoplastics and Thermosettings, 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: Fuel Technology

Fuel - Introduction – Calorific value - HCV and LCV – Bomb calorimeter – Numerical problems – Coal — Proximate and Ultimate analysis –Significance of the analysis.

Liquid fuels – Petroleum- Refining – Cracking – Petrol knocking – Diesel knocking - Octane and Cetane ratings – Anti-knock agents.

Gaseous fuels – Natural gas, LPG and CNG.

Bio-fuels- Bio-diesel and Power alcohol.

UNIT- III: Electrochemistry and Corrosion

Part-A: Electrochemistry and Its 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.

Part-B: Chemistry of Corrosion

Corrosion: Introduction to corrosion, Chemical and Electrochemical theory of corrosion, Pilling- Bedworth ratio rule, Differential aeration corrosion, Waterline corrosion and Galvanic corrosion.

Environmental factors (pH, temperature, Dissolved Oxygen) affecting the rate of corrosion.

Protection – Galvanizing, Tinning, Electroplating and Electro less plating (Nickel and Copper). Organic coatings - Paints (constituents and functions).

UNIT -IV: Water Technology

Introduction –Soft Water and Hardness of water, Estimation of hardness by EDTA Method - Boiler troubles - scale and sludge, Industrial water treatment – Specifications for drinking water, Bureau of Indian Standards(BIS) and World health organization(WHO) standards, Zeolite and Ion-exchange processes. Municipal water treatment –Break point of chlorination. Deflouridation technique.

Desalination of Brackish water- Reverse Osmosis (RO) and Electrodialysis.

UNIT -V: Chemistry of Materials

Cement: Introduction to Building materials – Portland cement, constituents, manufacturing process- raw materials for manufacturing process, reactions below 1300^{o}C and reactions between 1300 and 1450^{o}C, reactions during cooling, grinding or storage, chemical equations, Chemistry of setting and hardening of cement (hydration, hydrolysis, equations).

Lubricants: Definition, Properties and Applications.

Refractories: - Definition, Classification, Properties 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. 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. Classify the different types of fuels and its applications.(Understanding)
3. Distinguish between different parts in electrochemical cell, batteries and fuel cells. (Analyzing) Solve the corrosion related problems. (Applying)
4. Use the information related to water treatment methods. (Applying)
5. Design manufacturing process of cement. (Creating)

I.B.Tech II Semester

ENGINEERING MECHANICS

L	T	P	C
3	0	0	3

COURSE OBJECTIVES:

- Understand particle, body, rigid body, concept of force, analysis of forces acting on a rigid body
- Understand moment and the principle of moments
- Understand the laws of friction and its applications
- Analyzing trusses for its member forces.
- Understand the concept of centre of gravity and area moment of inertia
- Understanding principles of kinematics and kinetics applied to rigid bodies.

UNIT I

STATICS OF PARTICLES AND RIGID BODIES

Introduction: Fundamental concepts and principles of engineering mechanics – Forces on particles – Concurrent forces in a plane – Resolution of forces – Resultant of several concurrent forces.

Equilibrium of Particles: Free body diagram – Equilibrium of rigid bodies in two dimensions- Equilibrium of a two, three force body.

Moment of a force – Varignon's theorem – Equivalent system of forces – Reduction of system of forces into single force and couple.

UNIT II

FRICTION AND TRUSSES

Friction: Introduction-Types of friction – laws of Friction – Limiting friction – Cone of friction-static and Dynamic Frictions. Applications of Friction: Wedges – Ladder friction.

Analysis of trusses – statically determinate and indeterminate structures – Method of Joints.

UNIT III

PROPERTIES OF SURFACES AND VOLUMES

Centre of Gravity: Centroids of lines, areas, and volumes – Determination of centroids by integration – Theorem of Pappu's.

Area Moment of Inertia: Second moment or Moment of inertia of an area – Determination of moment of inertia of area by integration – Radius of gyration – Parallel and perpendicular axis theorems

UNIT IV

KINEMATICS

Rectilinear motion: **U**niform velocity and uniformly accelerated motion – Rectangular components of velocity and acceleration, Variable acceleration

Curvilinear motion: Normal and tangential components – Radial and transverse components – Motion of Projectile

UNIT V

KINETICS

Newton second law – D. Alembert's principle, Principle of work and energy for a rigid body – connected bodies – Principle of impulse and momentum – connected bodies.

COURSE OUTCOMES:

The students will be able to:

- Simplify the system of forces and moments to equivalent systems and construct free body diagrams and develop appropriate equilibrium equations
- Analyze systems with friction and for member forces
- Determine centroids of simple and composite areas and moment of inertia.
- Apply the fundamental concepts of kinematics of particles and rigid bodies along with equilibrium condition in solving engineering problems
- Analyze the problems of simple systems and connected bodies for displacement, velocity and acceleration.

TEXT BOOKS:

1. Engineering Mechanics, Timoshenko and Young, McGraw Hill Publishers, 5th Edition by, 2017.
2. Engineering Mechanics, S. S. Bhavakatti, New age international, 7 th Edition, 2019.

REFERENCE BOOKS:

1. Engineering Mechanics: Statics and Dynamics, James L. Meriam, L. Glenn Kraige, John Wiley & Sons, 7th Edition, 2017.
2. Engineering Mechanics -Statics and Dynamics, A K Tayal, Umesh Publications, 14th Edition, 2011.
3. Engineering Mechanics, R. S. Kurmi, S. Chand, 22nd Edition, 2018.

Branch: ME **I Year – II Semester** **Regulation: R20**

Sub. Title: ELEMENTS OF ELECTRICAL & ELECTRONICS ENGINEERING

L	T	P	C
3	0	0	3

Sub.Code:

Preamble:

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

Learning Objectives:

- To learn the basic principles of electrical law's and analysis of DC circuits and AC circuits.
- To understand the principles of operation and characteristics of DC machines.
- To understand the principle of operation of Transformer and Induction motor.
- To study the operation of PN junction diode, half wave, full wave rectifiers and OP-AMPs.
- To learn the operation of PNP and NPN transistors and various amplifiers.

UNIT - I

DC Circuits: Basic definitions, Electrical circuit elements (R - L and C), Ohm's-Law, Kirchhoff laws, Series and parallel connection of resistances with DC excitation, Mesh Analysis and Nodal Analysis.

AC Circuits: Representation of sinusoidal waveforms, peak and RMS values, phasor representation, real power, reactive power, apparent power, power factor. Introduction to three phase, phase sequence, relation between line and phase voltages and currents.

UNIT - II

DC Machines: Principle and operation of DC Generator, EMF equation, Applications. Principle and operation of DC Motor, Back EMF, Types of DC machines, Speed- Torque Characteristics of DC Motors, Speed control of DC Motors, Applications.

UNIT - III

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

Transformers: Principle of operation and construction of Single Phase Transformer, OC and SC test on transformer, efficiency

UNIT IV

Rectifiers & Linear ICs: PN junction diodes, Applications -Half wave and Bridge rectifiers. Characteristics of Operation Amplifiers (OP- AMPs), Applications of OP-AMPs -Inverting, Non-Inverting, Integrator and Differentiator.

UNIT V

Transistors : PNP and NPN junction transistor, transistor as an amplifier, Transistor Configurations-CE,CB,CC configurations, CE Amplifier Characteristics, Application of Transistors.

Course Outcomes:

- Able to analyze the various DC networks and AC circuits.
- Able to understand the operation and Applications of DC Generators and DC Motor.
- Able to analyze the performance of Transformer and Induction motor and Synchronous generator.
- Able to analyze the operation of half wave, full wave rectifiers and OP- AMPs.
- Able to explain the operation of transistors and its applications.

TEXT BOOKS:

1. Electronic Devices and Circuits, R.L. Boylestad and Louis Nashelsky, 10th edition, PEI/PHI2006
2. Theory and performance of Electrical Machines ,J.B.Gupta,3rd edition,Kataria.S.K& Sons
3. Electrical Circuit Theory and Technology by John Bird, 6th Edition Routledge Taylor & Francis Group

REFERENCE BOOKS:

1. Basic Electrical Engineering by M.S.Naidu and S.Kamakshiah,TMH Publications.
2. Fundamentals of Electrical Engineering by Rajendra Prasad, PHI Publications, 2nd edition.
3. Basic Electrical Engineering by Nagsarkar, Sukhija, Oxford Publications, 2nd edition.
4. Industrial Electronics by G.K. Mittal, PHI.
5. Electrical Technology by Surinder Pal Bali, Pearson Publications.
6. Principles of Basic Electrical Engineering by T.N. Nagsarkar, M.S. Sukhija, Oxford University Press.

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Year/Semester	I B. Tech/IISem	L	T	P	C
Regulation Year	2020-21	1	0	4	3
Subject	ComputerProgramming				
Branches	ME & CE				

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 the concepts – user defined datatypes, preprocessor directives, storage classes

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 user defined datatypes, preprocessor directives, storage classes

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, Tail recursion, Exercise programs covering these concepts

Unit-5

User defined datatypes: typedef, enum, Preprocessor directives: #include, #define, Conditional compilation directives, Global vs. Local variables, Storage classes, Scope and lifetime of a variable, 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) Programming in ANSI C, E Balagurusamy, Mcgraw Hill

Branch: ME **I Year – II Semester** **Regulation: R20**

Sub. Title: ELEMENTS OF ELECTRICAL & ELECTRONICS ENGINEERING LAB

L	T	P	C
0	0	3	1.5

Sub.Code:

Learning Objectives:

- To learn the application of DC and AC circuits.
- To understand the tests of a transformer
- To understand the tests and speed control of a DC machine
- To learn the operation and characteristics of PN junction diode and Full wave rectifier
- To learn the operation and characteristics of a Transistor
- To learn the operation and applications of CE amplifier and OP-AMP

Any 10 experiments are to be conducted as compulsory experiments

Section A: Electrical Engineering

1. *Verification of Kirchoff's Laws*
2. *Analysis of series RLC circuits*
3. *Measurement of Active, Reactive and Apparent power in a single phase circuit.*
4. *OC and SC Tests on single phase transformer*
5. *Speed control of DC Shunt motor by Armature voltage control & Field flux control*
6. *Brake test on DC Shunt Motor*
7. *Brake test on three phase Induction motor*

Section B: Electronics Engineering

1. *Characteristics of PN Junction diode*
2. *Characteristics of transistor in CE configuration*
3. *Full wave rectifier with and without filters*
4. *Frequency Response of CE Amplifier*
5. *Applications of OP-AMP (any two applications)*

Course Outcomes:

The student will be

- Able to analyze DC and AC circuits.
- Able to test the performance of a transformer

- Able to test and analyze various speed control methods of a DC machine
- Able to analyze the operation and characteristics of PN junction diode and Full wave rectifier
- Able to analyze the operation and characteristics of a Transistor
- Able to analyze the operation and applications of CE amplifier and OP-AMP

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Department of Basic Science

Syllabus: I B.Tech-II Semester

(R-20 Regulations)

(Common toCE &ME)

Course Title: Engineering 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, VGS, Techno 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

ME

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 identify the hand tools and instruments used in the fitting, carpentry, black smithy and tin smithy trades.
- To acquire skills in basic engineering practices like fitting, carpentry, black smithy and tin smithy etc.
- To gain measuring and marking skills.
- To gain basic knowledge in electrical wiring and assembly and disassembly of computer.

Note: At least two exercises to be done from first five trades & experiment from last trade is compulsory.

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

System Assembly

1. Assembly & Disassembly of computer

COURSE OUT COMES:

The student will be able to

- Identify the basic tools and equipments used in carpentry, fitting, black smithy, house wiring and tin smithy.
- Produce different joints in carpentry trade such as lap and dove tail joint
- Produce various fittings in the trade of fitting such as square fit and V fit.
- Make various objects in tinsmithy trade such as open scoop and square box.
- Perform various basic house-wiring connections
- Produce various shapes in black smithy trade such as round rod to square rod and S hook
- Assemble & Disassemble of computer

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. P. Kannaya and K.L. Narayana, **Engineering Practices Laboratory**, Scitech Publications (India) Pvt Ltd, 3rd edition, 2015.
2. S Gowri T Jeyapoovan, E**ngineering Practices Lab Manual, vikas publishing house, 5th edition, 2009.**
3. PN RAO, **Manufacturing Technology – Vol,** McGraw Hill Education, 4th edition, 2017.

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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.