



DADI INSTITUTE OF ENGINEERING & TECHNOLOGY

(An Autonomous Institute)

Approved by A.I.C.T.E & Permanently affiliated to JNTU GV

Accredited by NAAC with 'A' Grade and Inclusion u/s 2(f) & 12(B) of UGC Act

An ISO 9001:2015, ISO 14001:2015 & ISO 45001:2018 Certified Institute.

NH-16, Anakapalle - 531002, Visakhapatnam, A.P.

Website: www.diet.edu.in, 9963993229 E-mail: principal@diet.edu.in

CRITERIA- 2

2.6.1 - Programme Outcomes and Course Outcomes for all Programmes offered by the institution are stated and displayed on the website and communicated to teachers and students

- Course Outcomes of all courses



Prakash
PRINCIPAL
Dadi Institute of
Engineering & Technology
Autonomous
Anakapalle - 531 002.



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I B. TECH I SEM

CO'S

COMMUNICATIVE ENGLISH

Course Outcomes

- **By the end of the course the students will have** Learned how to understand
- The context, topic, and specific information from social or transactional dialogues.
- Remedially learn applying grammatical structures to formulate sentence sand use appropriate words and correct word forms.
- Using discourse markers to speak clearly on a specific topic in formal as well as informal discussions. (not required)
- Improved communicative competence in formal and informal contexts and for social and academic purposes.
- Critically comprehending and appreciating adding /listening texts and to write summaries based on global comprehension of these texts.
- Writing coherent paragraphs essays, letters/e-mails and resume.

LINEAR ALGEBRA & CALCULUS

Course Outcomes:

At the end of the course, the student will be able to:

- develop matrix algebra techniques that is needed by engineers for practical applications.
- to find the eigen values and eigen vectors and solve the problems by using linear transformation
- learn important tools of calculus in higher dimensions.
- familiarize with functions of several variables which is useful in optimization.
- familiarize with double and triple integrals of functions of several variables in two andt hr e e dimensions.

INTRODUCTION TO PROGRAMMING

Course Outcomes:

At the end of the Course, Student should be able to:

- Illustrate the Fundamental concepts of Computers and basics of computer programming and problem-solving approach
- Understand the Control Structures, branching and looping statements
- Use of Arrays and Pointers in solving complex problems.
- Develop Modular program aspects and Strings fundamentals.
- Demonstrate the ideas of User Defined Data types, files. Solve real world problems using the concept of Structures, Unions and File operations

ENGINEERING CHEMISTRY

Course Outcomes: At the end of the course, the students will be able to

- Demonstrate the corrosion prevention methods and factors affecting corrosion.
- Explain the preparation, properties, and applications of thermoplastics &thermosetting, elastomers & conducting polymers.
- Explain calorific values, octane number, refining of petroleum and cracking of oils.
- Explain the setting and hardening of cement.
- Summarize the concepts of colloids, micelle and nanomaterials.

ENGINEERING PHYSICS

Course Outcomes:

- Analyze the intensity variation of light due to polarization, interference and diffraction.
- Familiarize with the basics of crystals and their structures.
- Explain fundamentals of quantum mechanics and apply it to one dimensional motion of particles.
- Summarize various types of polarization of dielectrics and classify the magnetic materials.
- Explain the basic concepts of Quantum Mechanics and the band theory of solids. And identify the type of semiconductor using Hall effect.

CHEMISTRY

Course Outcomes: At the end of the course, the students will be able to:

- Compare the materials of construction for battery and electrochemical sensors.
- Explain the preparation, properties, and applications of thermoplastics & thermosetting &elastomers conducting polymers.
- Explain the principles of spectrometry, slc in separation of solid and liquid mixtures.
- Apply the principle of Band diagrams in the application of conductors and semiconductors.
- Summarize the concepts of Instrumental methods

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- Apply the principle of Band diagrams in the application of conductors and semiconductors.
- Summarize the concepts of Instrumental methods

BASIC CIVIL & MECHANICAL ENGINEERING

Course Outcomes: On completion of the course, the student should be able to:

- Understand various sub-divisions of Civil Engineering and to appreciate their role in ensuring better society.
- Know the concepts of surveying and to understand the measurement of distances, angles and levels through surveying.
- Realize the importance of Transportation in nation's economy and the engineering measures related to Transportation.
- Understand the importance of Water Storage and Conveyance Structures so that the social responsibilities of water conservation will be appreciated.
- Understand the basic characteristics of Civil Engineering Materials and attain knowledge on prefabricated technology.

ENGINEERING GRAPHICS

Course Outcomes:

- Understand the principles of engineering drawing, including engineering curves, scales, orthographic and isometric projections.
- Draw and interpret orthographic projections of points, lines, planes and solids in front, top and side views.
- Understand and draw projection of solids in various positions in first quadrant.
- Explain principles behind development of surfaces.
- Prepare isometric and perspective sections of simple solids.

BASIC ELECTRICAL & ELECTRONICS ENGINEERING

Course Outcomes:

- Remember the fundamental laws, operating principles of motors, generators, MC and MI instruments.
- Understand the problem solving concepts associated to AC and DC circuits, construction and operation of AC and DC machines, measuring instruments; different power generation mechanisms, Electricity billing concept and important safety measures related to electrical operations.
- Apply mathematical tools and fundamental concepts to derive various equations related to machines, circuits and measuring instruments; electricity bill calculations and layout representation of electrical power systems.
- Analyze different electrical circuits, performance of machines and measuring instruments.
- Evaluate different circuit configurations, Machine performance and Power systems operation.

COMMUNICATIVE ENGLISH LAB

Course Outcomes:

- By the end of the course, the students will behave
- Understand the different aspects of the English language oral communication with emphasis on Listening and Speaking S skills.
- Apply communication skills through various language learning activities.
- Analyse the English speech sounds, stress, rhythm and intonation for better listening and speaking comprehension.
- Evaluate and exhibit professionalism in participating in debates and group discussions with polite turn taking strategies and sound more professional while communicating with others
- Create effective resonate and prepare them to face interviews communicate appropriately in corporate settings.

ENGINEERING PHYSICS LAB

Course Outcomes:

- The students will be able to
 - Operate optical instruments like travelling microscope and spectrometer.
 - Estimate the wavelengths of different colours using diffraction grating.
 - Plot the intensity of the magnetic field of circular coil carrying current with distance.
 - Evaluate dielectric constant and magnetic susceptibility for dielectric and magnetic materials respectively.
 - Calculate the band gap of a given semiconductor.

CHEMISTRY LAB

Course Outcomes: At the end of the course, the students will be able to

- Determine the cell constant and conductance of solutions.
- Prepare advanced polymer Bakelite materials.
- Measure the strength of an acid present in secondary batteries.
- Analyze the IR spectra of some organic compounds.
- Calculate strength of acid in Pb-Acid battery.

ENGINEERING WORKSHOP

Course Outcomes:

- Identify workshop tools and their operational capabilities.
- Practice on manufacturing of components using workshop trades including fitting, carpentry, foundry and welding.
- Apply fitting operations in various applications.
- Apply basic electrical engineering knowledge for House Wiring Practice

IT WORKSHOP

Course Outcomes:

- Perform Hardware troubleshooting.
- Understand Hardware components and inter dependencies.
- Safeguard computer systems from viruses/worms.
- Document/ Presentation preparation.
- Perform calculations using spreadsheets

ELECTRICAL & ELECTRONICS ENGINEERING WORKSHOP

Course Outcomes:

- Understand the Electrical circuit design concept; measurement of resistance, power, power factor; concept of wiring and operation of Electrical Machines and Transformer.
- Apply the theoretical concepts and operating principles to derive mathematical models for circuits, Electrical machines and measuring instruments; calculations for the measurement of resistance, power and power factor.
- Apply the theoretical concepts to obtain calculations for the measurement of resistance, power and power factor.
- Analyse various characteristics of electrical circuits, electrical machines and measuring instruments.
- Design suitable circuits and methodologies for the measurement of various electrical parameters; Household and commercial wiring

COMPUTER PROGRAMMING LAB

Course Outcomes:

- Read, understand, and trace the execution of programs written in C language.
- Select the right control structure for solving the problem.
- Develop C programs which utilize memory efficiently using programming constructs like pointers.
- Develop, Debug and Execute programs to demonstrate the applications of arrays, functions, basic concepts of pointers in C.

HEALTH AND WELLNESS, YOGA AND SPORTS

Course Outcomes: After completion of the course the student will be able to

- Understand the importance of yoga and sports for Physical fitness and sound health.
- Demonstrate an understanding of health-related fitness components.
- Compare and contrast various activities that help enhance their health.
- Assess current personal fitness levels.
- Develop Positive Personality

NSS/NCC/SCOUTS & GUIDES/COMMUNITY SERVICE

Course Outcomes: After completion of the course the students will be able to

- Understand the importance of discipline, character and service motto.
- Solve some societal issues by applying acquired knowledge, facts, and techniques.
- Explore human relationships by analyzing social problems.
- Determine to extend their help for the fellow beings and downtrodden people.

Develop leadership skills and civic responsibilities

COMMUNICATIVE ENGLISH

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DIFFERENTIAL EQUATIONS AND VECTOR CALCULUS

- **Course Outcomes:**
- At the end of the course, the student will be able to:
- Solve the differential equations related to various engineering fields.
- Model engineering problems as higher order differential equations and solve analytically.
- Identify solution methods for partial differential equations that model physical processes.
- Interpret the physical meaning of different operators such as gradient, curl and divergence.
- Estimate the work done against a field, circulation and flux using vector calculus.

ENGINEERING MECHANICS

- **Course Outcomes:** On Completion of the course, the student should be able to
- Understand the fundamental concepts in mechanics and determine the frictional forces for bodies in contact.
- Analyze different force systems such as concurrent, coplanar and spatial systems and calculate their resultant forces and moments.
- Calculate the centroids, center of gravity and moment of inertia of different geometrical shapes.
- Apply the principles of work-energy and impulse-momentum to solve the problems of rectilinear and curvilinear motion of a particle.
- Solve the problems involving the translational and rotational motion of rigid bodie

DATA STRUCTURES

Course Outcomes: At the end of the course, Student will be able to

- Explain the role of linear data structures in organizing and accessing data efficiently in algorithms.
- Design, implement, and apply linked lists for dynamic data storage, demonstrating understanding of memory allocation.
- Develop programs using stacks to handle recursive algorithms, manage program states, and solve related problems.
- Apply queue-based algorithms for efficient task scheduling and breadth-first traversal in graphs and distinguish between deques and priority queues, and apply them appropriately to solve data management challenges.
- Devise novel solutions to small scale programming challenges involving data structures such as stacks, queues, Trees
- Recognize scenarios where hashing is advantageous, and design hash-based solutions for specific problems.

ENGINEERING PHYSICS

Course Outcomes:

- Analyze the intensity variation of light due to polarization, interference and diffraction.
- Familiarize with the basics of crystals and their structures.
- Explain fundamentals of quantum mechanics and apply it to one dimensional motion of particles.
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- Understand the importance of Water Storage and Conveyance Structures so that the social responsibilities of water conservation will be appreciated.
- Understand the basic characteristics of Civil Engineering Materials and attain knowledge on prefabricated technology.

NETWORK ANALYSIS

Course Outcomes: At the end of this course students will demonstrate the ability to

- Understand basic electrical circuits with nodal and mesh analysis.
- Analyze the circuit using network simplification theorems.
- Find Transient response and Steady state response of a network.
- Analyze electrical networks in the Laplace domain.
- Compute the parameters of a two-port network

ENGINEERING GRAPHICS

Course Outcomes:

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Course Outcomes:

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- Generation mechanisms, Electricity billing concept and important safety measures related to electrical operations.
- Apply mathematical tools and fundamental concepts to derive various equations related to machines, circuits and measuring instruments; electricity bill calculations and layout representation of electrical power systems.
- Analyze different electrical circuits, performance of machines and measuring instruments.
- Evaluate different circuit configurations, Machine performance and Power systems operation.

ELECTRICAL CIRCUIT ANALYSIS-1

Course Outcomes:

- Remembering the basic electrical elements and different fundamental laws.
- Understand the network reduction techniques, transformations, concept of self-inductance and mutual inductance, phasor diagrams, resonance and network theorems.
- Apply the concepts to obtain various mathematical and graphical representations.
- Analyze nodal and mesh networks, series and parallel circuits, steady state response, different circuit topologies (with R, L and C components).
- Evaluation of Network theorems, electrical, magnetic and single-phase circuits.

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Course Outcomes:

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Course Outcomes:

The students will be able to

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CHEMISTRY LAB

Course Outcomes: At the end of the course, the students will be able to

- Determine the cell constant and conductance of solutions.
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ENGINEERING WORKSHOP

Course Outcomes:

- Identify workshop tools and their operational capabilities.
- Practice on manufacturing of components using workshop trades including fitting, carpentry, foundry and welding.
- Apply fitting operations in various applications.
- Apply basic electrical engineering knowledge for House Wiring Practice

IT WORKSHOP

Course Outcomes:

- Perform Hardware troubleshooting.
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ELECTRICAL & ELECTRONICS ENGINEERING WORKSHOP

Course Outcomes:

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- Devise novel solutions to small scale programming challenges involving data structures such as stacks, queues, Trees
- Recognize scenarios where hashing is advantageous, and design hash-based solutions for specific problems

ENGINEERING MECHANICS & BUILDING PRACTICES LAB

Course Outcomes: On completion of the course, the student should be able to:

- Evaluate the coefficient of friction between two different surfaces and between the inclined plane and the roller.
- Verify Law of Parallelogram of forces and Law of Moment using force polygon and bell crank lever.
- Determine the Centre of gravity different configurations
- Understand the Quality Testing and Assessment Procedures and principles of Non-Destructive Testing.
- Exposure to safety practices in the construction industry.

ELECTRICAL CIRCUITS LAB

Course Outcomes:

- Understand the concepts of network theorems, node and mesh networks, series and parallel resonance and Locus diagrams.
- Apply various theorems to compare practical results obtained with theoretical calculations.
- Determine self, mutual inductances and coefficient of coupling values, parameters of choke coil.
- Analyze different circuit characteristics with the help of fundamental laws and various configurations.
- Create locus diagrams of RL, RC series circuits and examine series and parallel resonance.

NETWORK ANALYSIS AND SIMULATION LABORATORY

Course Outcomes:

- Verify Kirchoff's laws and network theorems.
- Measure time constants of RL & RC circuits.
- Analyze behavior of RLC circuit for different cases.
- Design resonant circuit for given specifications.
- Characterize and model the network in terms of all network parameters.

HEALTH AND WELLNESS, YOGA AND SPORTS

Course Outcomes: After completion of the course the student will be able to

- Understand the importance of yoga and sports for Physical fitness and sound health.
- Demonstrate an understanding of health-related fitness components.
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Linear Algebra & Calculus

- Develop matrix algebra techniques that are needed by engineers for practical applications.
- To find the eigen values and eigen vectors and solve the problems transformation
- Learn important tools of calculus in higher dimensions.
- Familiarize with functions of several variables which is useful in optimization.
by using linear
- Familiarize with double and triple integrals of functions of several variables in two and three dimensions.

Chemistry

- Compare the materials of construction for battery and electrochemical sensors.
- Explain the preparation, properties, and applications of thermoplastics & thermosetting & elastomers conducting polymers.
- Explain the principles of spectrometry, slc in separation of solid and liquid mixtures.
- Apply the principle of Band diagrams in the application of conductors and semiconductors.
- Summarize the concepts of Instrumental methods.

Introduction To C Programming

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Engineering Graphics

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- Understand and draw projection of solids in various positions in first quadrant.
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Basic Electrical & Electronics Engineering

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Computer Programming Lab

- Read, understand, and trace the execution of programs written in C language.
- Select the right control structure for solving the problem.
- Develop C programs which utilize memory efficiently using programming constructs like pointers.
- Develop, Debug and Execute programs to demonstrate the applications of arrays, functions, basic concepts of pointers in C.

Electrical & Electronics Engineering Workshop

- Understand the Electrical circuit design concept; measurement of resistance, power, power factor; concept of wiring and operation of Electrical Machines and Transformer.
- Apply the theoretical concepts and operating principles to derive mathematical models for circuits, Electrical machines and resistance, power and power factor measuring instruments; calculations for the measurement of
- Apply the theoretical concepts to obtain calculations for the measurement of resistance, power and power factor.
- Analyse various characteristics of electrical circuits, electrical machines instruments and measuring
- Design suitable circuits and methodologies for the measurement of various electrical parameters; Household and commercial wiring.

II-I

Mathematics– IV

- Apply Cauchy-Riemann equations to complex functions in order to determine whether a given continuous function is analytic (L3)
- Find the differentiation and integration of complex functions used in engineering problems (L5)
- Make use of the Cauchy residue theorem to evaluate certain integrals (L3)
- Apply discrete and continuous probability distributions (L3)
- Design the components of a classical hypothesis test (L6)
- Infer the statistical inferential methods based on small and large sampling tests (L4)

Electronic Devices and Circuits

- Understand the basic concepts of semiconductor physics.
- 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.

Electrical Circuit Analysis

- Understand the concepts of balanced and unbalanced three-phase circuits.
- Know the transient behavior of electrical networks with DC excitations.
- Learn the transient behavior of electrical networks with AC excitations.
- Estimate various parameters of a two port network.
- Understand the significance of filters in electrical networks.

DC Machines and Transformers

- Assimilate the concepts of electromechanical energy conversion.
- Mitigate the ill-effects of armature reaction and improve commutation in dc machines.
- Understand the torque production mechanism and control the speed of dc motors.

- Analyze the performance of single phase transformers.
- Predetermine regulation, losses and efficiency of single phase transformers.
- Parallel transformers, control voltages with tap changing methods and achieve three-phase to two-phase transformation.

Electro Magnetic Fields

- Compute electric fields and potentials using Gauss law or solve Laplace's or Poisson's equations for various electric charge distributions.
- Calculate the capacitance and energy stored in dielectrics.
- Calculate the magnetic field intensity due to current carrying conductor and understanding the application of Ampere's law, Maxwell's second and third law.
- Estimate self and mutual inductances and the energy stored in the magnetic field.
- Understand the concepts of displacement current and Poynting theorem and Poynting vector

Electrical Circuits Lab

- Apply various theorems
- Determination of self and mutual inductances
- Two port parameters of a given electric circuits
- Draw locus diagrams
- Draw Waveforms and phasor diagrams for lagging and leading networks

Control Systems

- Derive the transfer function of physical systems and determination of overall transfer function using block diagram algebra and signal flow graphs.
- Determine time response specifications of second order systems and absolute and relative stability of LTI systems using Routh's stability criterion and root locus method.
- Analyze the stability of LTI systems using frequency response methods.
- Design Lag, Lead, Lag-Lead compensators to improve system performance using Bode diagrams.
- Represent physical systems as state models and determine the response. Understand the concepts of controllability and observability

• **Utilization Of Electrical Energy**

- Identify various illumination methods produced by different illuminating sources.
- Identify a suitable motor for electric drives and industrial applications
- Identify most appropriate heating and welding techniques for suitable applications.
- Distinguish various traction system and determine the tractive effort and specific energy consumption.
- Validate the necessity and usage of different energy storage schemes for different applications and comparisons.

Control Systems Lab

- Analyze the performance and working Magnetic amplifier, D.C and A.C. servo motors and synchronous.
- Design P,PI,PD and PID controllers
- Design lag, lead and lag–lead compensators
- Evaluate temperature control of an oven using PID controller
- Determine the transfer function of D.C Motor
- Analyze the performance of D.C and A.C Servo Motor.
- Test the controllability and observability.
- Judge the stability in time and frequency domain.
- To examine different logic gates and Boolean expressions using PLC.

Power Electronics Lab

- Analyze characteristics of various power electronic devices and design firing circuits for SCR.
- Analyze the performance of single–phase dual, three–phase full–wave bridge converters and dual converters with both resistive and inductive loads.
- Examine the operation of Single-phase AC voltage regulator and Cycloconverter with resistive and inductive loads.
- Differentiate the working and control of Buck converter and Boost converter.
- Differentiate the working & control of Square wave inverter and PWM inverter.

Soft Skill Course: Employability Skills

- Follow strategies in minimizing time consumption in problem solving Apply shortcut methods to solve problems
- Confidently solve any mathematical problems and utilize these mathematical skills both in their professional as well as personal life.
- Analyze, summarize and present information in quantitative forms including table, graphs and formulas
- Understand the core competencies to succeed in professional and personal life
- Learn and demonstrate a set of practical skills such as time management, self- management, handling conflicts, team leadership, etc

IV-I

FLEXIBLE ALTERNATING CURRENT TRANSMISSION SYSTEM

- Know the concepts of facts controller and power flow control in transmission line.
- Demonstrate operation and control of voltage source converter and know the concepts of current source converter.
- Analyze compensation by using different compensators to improve stability and reduce power oscillations in the transmission lines.

- Know the concepts and methods of compensations using series compensators.
- Analyze operation of Unified Power Flow Controller (UPFC) and Interline power flow controller (IPFC)

HYBRID ELECTRIC VEHICLES

- Know the concept of electric vehicles and hybrid electric vehicles.
- Familiar with different configurations of hybrid electric vehicles.
- Choose an effective motor for EV and HEV application
- Understand the power converters used in hybrid electric vehicles
- Know different batteries and other energy storage systems

POWER SYSTEM OPERATION AND CONTROL

- Compute optimal load scheduling of Generators.
- Formulate hydrothermal scheduling and unit commitment problem..
- Analyze effect of Load Frequency Control for single area systems
- Analyze effect of Load Frequency Control for two area systems
- Describe the effect of reactive power control for transmission lines.

MACHINE LEARNING WITH PYTHON LAB

- Implement procedures for the machine learning algorithms
- Design and Develop Python programs for various Learning algorithms
- Apply appropriate data sets to the Machine Learning algorithms
- Develop Machine Learning algorithms to solve real world problems

**EVEN
SEM
I-II**

Differential Equations & Vector Calculus

- Solve the differential equations related to various engineering fields.
- Model engineering problems as higher order differential equations and solve analytically.
- Identify solution methods for partial differential equations that model physical processes.
- Interpret the physical meaning of different operators such as gradient, curl and divergence.
- Estimate the work done against a field, circulation and flux using vector calculus.

Engineering Physics

- Analyze the intensity variation of light due to polarization, interference and diffraction.
Familiarize with the basics of crystals and their structures.
- Explain fundamentals of quantum mechanics and apply it to one dimensional motion of particles.
- Summarize various types of polarization of dielectrics and classify the magnetic materials.
- Explain the basic concepts of Quantum Mechanics and the band theory of solids.
- Identify the type of semiconductor using the Hall effect.

Communicative English

- By the end of the course the students will have Learned how to understand the context, topic, and specific information from social or transactional dialogues.
- Remedially learn applying grammatical structures to formulate sentence sand words and correct word forms.use appropriate
- Using discourse markers to speak clearly on a specific topic in formal as well as informal discussions.(not required)
- Improved communicative competence in formal and informal contexts and academic purposes.for social and
- Critically comprehending and appreciating ding /listening texts and to write summaries based on global comprehension of these texts.
- Writing coherent paragraphs, essays, letters/e-mails and resume.

Basic Civil & Mechanical Engineering

- Understand various subdivisions of Civil Engineering and to appreciate their role in ensuring better society.

- Know the concepts of surveying and to understand the measurement of distances, angles and levels through surveying.
- Realize the importance of Transportation in nation's economy and the engineering measures related to Transportation.
- Understand the importance of Water Storage and Conveyance Structures so that the social responsibilities of water conservation will be appreciated.
- Understand the basic characteristics of Civil Engineering Materials and attain knowledge on prefabricated technology.

Electrical Circuit Analysis -I

- Remembering the basic electrical elements and different fundamental laws.
- Understand the network reduction techniques, transformations, concept of self- inductance and mutual inductance, phasor diagrams, resonance and network theorems.
 - Apply the concepts to obtain various mathematical and graphical representations.
 - Analyse nodal and mesh networks, series and parallel circuits, steady state response, different circuit topologies (with R, L and C components).
 - Evaluation of Network theorems, electrical, magnetic and single-phase circuits.

Communicative English Lab

- Understand the different aspects of the English language proficiency with emphasis on LSRW skills.
- Apply communication skills through various language learning activities.
- Analyze the English speech sounds, stress, rhythm, intonation and syllable division for better listening and speaking comprehension.
- Evaluate and exhibit professionalism in participating in debates and group discussions.
- Create effective Course Objectives

II-II

Python Programming

- Develop essential programming skills in computer programming concepts like data types, containers
- Apply the basics of programming in the Python language Solve coding tasks related conditional execution, loops
- Solve coding tasks related to the fundamental notions and techniques used in object- oriented programming

Digital Electronics

- Classify different number systems and apply to generate various codes.
- Use the concept of Boolean algebra in minimization of switching functions
- Design different types of combinational logic circuits.
- Apply knowledge of flip-flops in designing of Registers and counters
- The operation and design methodology for synchronous sequential circuits and
- algorithmic state machines.

Power System-I

- Identify the different components of thermal power plants.
- Identify the different components of nuclear Power plants.
- Identify the different components of air and gas insulated substations.
- Identify single core and three core cables with different insulating materials.
- Analyze the different economic factors of power generation and tariffs

Induction and Synchronous Machines

- Explain the operation and performance of three phase induction motor.
- Analyze the torque-speed relation, performance of induction motor and induction generator.
- Implement the starting of single phase induction motors.
- Develop winding design and predetermine the regulation of synchronous generators.
- Explain hunting phenomenon, implement methods of starting and correction of power factor with synchronous motor.

Managerial Economics & Financial Analysis

- The Learner is equipped with the knowledge of estimating the Demand and demand elasticities for a product.
- The knowledge of understanding of the Input-Output-Cost relationships and estimation of the least cost combination of inputs.
- The pupil is also ready to understand the nature of different markets and Price Output determination under various market conditions and also to have the knowledge of different Business Units.
- The Learner is able to prepare Financial Statements and the usage of various Accounting tools for Analysis.
- The Learner can able to evaluate various investment project proposals with the help of capital budgeting techniques for decision making

Python Programming Lab

- Write, Test and Debug Python Programs
- Use Conditionals and Loops for Python Programs
- Use functions and represent Compound data using Lists, Tuples and
- Dictionaries Use various applications using python

Induction and Synchronous Machines Lab

- Assess the performance of single phase and three phase induction motors.
- Control the speed of the three phase induction motor.
- Predetermine the regulation of three-phase alternators by various methods.
- Find the X_d/X_q ratio of alternator and assess the performance of three-phase synchronous motor.
- Determine the performance of single phase AC series motor

Digital Electronics Lab

- Learn the basics of gates, flip-flops and counters.
- Construct basic combinational circuits and verify their functionalities
- Apply the design procedures to design basic sequential circuits
- To understand the basic digital circuits and to verify their operation
- Apply Boolean laws to simplify the digital circuits.

IoT Applications of Electrical Engineering Lab

- Apply various technologies of Internet of Things to real time applications.
- Apply various communication technologies used in the Internet of Things.
- connect the devices using web and internet in the IoT environment.
- implement IoT to study Smart Home, Smart city, etc.

III-II

Microprocessors and Microcontrollers

- Know the concepts of the Microprocessor capability in general and explore the evaluation of microprocessors.
- Analyze the instruction sets - addressing modes - minimum and maximum modes operations of 8086 Microprocessors
- Analyze the Microcontroller and interfacing capability
- Describe the architecture and interfacing of 8051 controller
- Know the concepts of PIC micro controller and its programming.

Electrical Measurements and Instrumentation

- Know the construction and working of various types of analog instruments.
- Describe the construction and working of wattmeter and power factor meters
- Know the construction and working various bridges for the measurement resistance - inductance and capacitance
- Know the operational concepts of various transducers
- Know the construction and operation digital meters

Power System Analysis

- Draw an impedance diagram for a power system network and calculate per unit quantities.
- Apply the load flow solution to a power system using different methods.
- Form Z bus for a power system network and analyze the effect of symmetrical faults.
- Analyze the stability concepts of a power system.

Electrical Drives

- Explain the fundamentals of electric drive and different electric braking methods.
- Analyze the operation of three-phase converter fed dc motors and four quadrant operations of dc motors using dual converters.
- Describe the DC-DC converter fed control of dc motors in various quadrants of operation
- Know the concept of speed control of induction motor by using AC voltage controllers and voltage source inverters and differentiate the stator side control and rotor side control
- Learn the concepts of speed control of synchronous motor with different methods

Electrical Measurements and Instrumentation Lab

- To understand students how different types of meters work and their construction.
- To make the students understand how to measure resistance, inductance and capacitance by AC & DC bridges.
- To understand the testing of CT and PT.
- To Understand and the characteristics of Thermo couples, LVDT, Capacitive transducer, piezoelectric transducer.
- To understand the measurement of strain and choke coil parameters.
- To study the procedure for standardization and calibration of various methods

Power Systems and Simulation Lab

- Estimate the sequence impedances of 3-phase Transformer and Alternators
- Evaluate the performance of transmission lines
- Analyze and simulate power flow methods in power systems
- Analyze and simulate the performance of PI controller for load frequency control.
- Analyze and simulate stability studies of power systems

Microprocessors and Microcontrollers lab

- Write assembly language program using 8086 microprocessor based on arithmetic - logical - number systems and shift operations.
- Write assembly language programs for numeric operations and array handling problems.
- Write a assembly program on string operations.
- Interface 8086 with I/O and other devices.
- Do parallel and serial communication using 8051 & PIC 18 micro controllers.
- Program microprocessors and microcontrollers for real world applications.

Machine Learning with Python

- Illustrate and comprehend the basics of Machine Learning with Python
- Demonstrate the algorithms of Supervised Learning and be able to differentiate linear and logistic regressions
- Demonstrate the algorithms of Unsupervised Learning and be able to understand the clustering algorithms
- Evaluate the concepts of binning, pipeline Interfaces with examples
- Apply the sentiment analysis for various case studies

Research Methodology

- Understand objectives and characteristics of a research problem
- Analyze research related information and to follow research ethics.
- Understand the types of intellectual property rights.
- Learn about the scope of IPR.
- Understand the new developments in IPR.

MBA COURSE OUTCOMES

I Semester

MANAGEMENT & ORGANIZATIONAL BEHAVIOUR COURSE OUTCOMES

- Explain the Importance & Role of Management in the Organizations.
- Evaluate the different aspects related to Decision Making and Controlling Process
- Describe the different theories related to Individual behavior in the Organization.
- Analyze Group Behavioral influence in the Organization.
- Evaluate the process and climate effects in Organization Behavior.

Accounting for Managers Course Outcomes

- Explain the application of management accounting and the various tools used
- Make inter-firm and inter-period comparison, of financial statements
- Analyse the financial statement using various ratios
- Prepare Fund Statement and Cash Flow Statement Flow
- Prepare different budgets for the business

Managerial Economics COURSE OUTCOMES

- Enable to apply economic reasoning to the economic problems
- To gain knowledge how the demand and supply interact to determine price
- Provides knowledge about cost of production and how the production cost can be minimized
- To aware about different market condition and its price determination
- To understand the concept and evaluation of national income concept and evaluation

Business Communication and Soft Skills

COURSE OUTCOMES

- Ability for Effective Business
- Writing Effective Interpersonal Communication
- Developing and Delivering Effective Presentations
- Demonstrate Soft skills required for business situations
- Analyze the value of Soft skills for career enhancement

Legal and Business Environment

COURSE OUTCOMES

- Knowledge on Indian Contract Act
- Understand the Indian Partnership Act and Consumer Protection Act
- Understand the Factors Affecting Business
- Knowledge on Economic Policies of India
- Understand Environmental Problems and ways of Handling

Quantitative Analysis for Business Decisions

COURSE OUTCOMES

- The successful completion of this course will impart the basic data analysis skills to the students.
- This will enable students to model business problems and analyze them with the help of fundamental statistical and theoretical backgrounds.
- Examine the basics of descriptive statistics for managers
- Identify the practical applications of probability theory
- Solve business problems with the help of fundamental statistical and theoretical backgrounds.

Information Technology LAB Course Outcomes

- Understand the structure and basic components of computer.
- Know about the processor structure and communication between memory and I/O devices
- Know about number representation and Conversions
- Know about Ms-Word and its features
- Familiar in working with spreadsheets and create their own power point presentations

II Semester

FINANCIAL MANAGEMENT

Course Outcomes

- Explain the concept of fundamental financial concepts, especially time value of money.
- Apply capital budgeting projects using traditional methods.
- Analyze the main ways of raising capital and their respective advantages and disadvantages in different circumstances
- Integrate the concept and apply the financial concepts to calculate ratios and do the capital budgeting

MARKETING MANAGEMENT:

Course Outcomes

- Students will demonstrate strong conceptual knowledge in the functional area of marketing management.
- Students will demonstrate effective understanding of relevant functional areas of marketing management and its application.
- Students will demonstrate analytical skills in identification and resolution of problems pertaining to marketing management.

HUMAN RESOURCE MANAGEMENT:

Course Outcomes

- To develop the understanding of the concept of human resource management and to understand
- To develop necessary skill set for application of various HR issues.
- To analyse the strategic issues and strategies required to select and develop manpower resources.
- To integrate the knowledge of HR concepts to take correct business decisions.

BUSINESS RESEARCH METHODS:

Course Outcomes

- Develop understanding on various kinds of research, objectives of doing research, research process, research designs and sampling.
- Have basic knowledge on qualitative research techniques
- Have adequate knowledge on measurement & scaling techniques as well as the quantitative data analysis
- Have basic awareness of data analysis-and hypothesis testing procedures

OPERATIONS MANAGEMENT:

Course Outcomes

- At the end of the course the students can apply the concept of operations management in manufacturing and service sector and will be able to plan and implement production and service related decisions.
- At the end of the course the student will be able to plan production schedules and plan resources (material and machine) required for production
- At the end of the course the students can design maintenance schedules in manufacturing units, identify and propose material handling equipment and implement industrial safety rules.
- At the end of the course the students will be able to apply the concepts of purchase, stores and inventory management and analyze and evaluate material requirement decisions
- At the end of the course the students can measure performance related to productivity and will be able to conduct basic industrial engineering study on men and machines.

DATABASE MANAGEMENT SYSTEM:

Course Outcomes

- Identify the basic concepts and various data model used in database design ER modeling concepts and architecture use and design queries using SQL.
- Apply relational database theory and be able to describe relational algebra expressions, tuple and domain relation expression from queries.
- Recognize and identify the use of normalization and functional dependency, indexing and hashing technique used in database design.
- Recognize /identify the purpose of query processing and optimization also demonstrate the basic of query evaluation.
- Apply and relate the concept of transaction, concurrency control and recovery in database.

R Programming:

Course Outcomes

- Install, Code and Use R Programming Language in R Studio IDE to perform basic tasks on Vectors, Matrices and Data frames.
- Describe key terminologies, concepts and techniques employed in Statistical Analysis.
- Define, Calculate, Implement Probability and Probability Distributions to solve a wide variety of problems.
- Conduct and Interpret a variety of Hypothesis Tests to aid Decision Making.
- Understand, Analyze, Interpret Correlation and Regression to analyze the underlying relationship between different variables.

III Semester

Strategic Management Course Outcomes:

- To expose students to various perspectives and concepts in the field of Strategic Management
- The course would enable the students to understand the principles of strategy formulation, implementation and control in organizations.
- To help students develop skills for applying these concepts to the solution of business problems
- To help students master the analytical tools of strategic Management
- Understand the basic concepts and principles of strategic management analyze the internal and external environment of business.

Operations Research

Course Outcomes:

- Identify and develop operational research models from the verbal description of the real system. Understand the mathematical tools that are needed to solve optimization problems.
- Use mathematical software to solve the proposed models.
- Develop a report that describes the model and the solving technique, analyze the results and propose recommendations in language understandable to the decision-making processes in Management Engineering.
- Proficiency with tools from optimization, probability, statistics, simulation, and engineering economic analysis, including fundamental applications of those tools in industry and the public sector in contexts involving uncertainty and scarce or expensive resources.
- Facility with mathematical and computational modeling of real decision-making problems, including the use of modeling tools and computational tools, as well as analytic skills to evaluate the problems.

Investment Analysis & Portfolio Management

Course Outcomes: At the end of this course students should be able to:

- To provide a theoretical and practical background in the field of investments.
- Designing and managing the bond as well as equity portfolios in the real word.
- Detail relevant asset classes for investment and valuing equity and debt instruments.
- Define performance metrics of investment funds and measuring the portfolio performances.

Financial Markets and Services

Course Outcomes:

- Understand the role and function of the financial system in reference to the macro economy.
- Demonstrate an awareness of the current structure and regulation of the Indian financial services sector.
- Evaluate and create strategies to promote financial products and services.

Managing Bank and Financial Institutions

Course Outcomes:

- Recognize the topics related to banking and monetary policies, financial institutions and financial risks.
- Identify the different financial institutions and their instruments.
- Point out their practical skills in determining the interest rates
- Construct their professional and analytical skill with respect to the banking and financial operations and monetary tools.
- Develop appropriate effective written and oral communication skills relevant to banking and financial institutions.

MERGERS, ACQUISITIONS AND CORPORATE RESTRUCTURING

Course Outcomes:

- Distinguish the forms of restructuring a company in Russia and abroad, the motivation and prerequisites of M&A deals, the specifics of legislative regulation
- Evaluate the effectiveness of the transaction, forecast the prospects and consequences of M&A deal
- Estimate the value of the target company of the merger or acquisition; • Build a strategy for external growth and development of the company through M&A
- Identify the tactics of hostile takeovers and define antitakeover measures
- Choose methods of financing transactions taking into account strategic, financial, tax aspects

Leadership and Change Management

Course Outcomes:

- Students will understand the history of leadership and current leadership theories. In addition, students will understand how leadership models are put into practice personally, locally, and globally.
- Students will gain knowledge of diverse cultures, cross-cultural communication, the dynamics of privilege and oppression, and the uses of power between groups.
- Students will understand how ethics, morals, and values relate to their leadership dilemmas.
- Students will be able to integrate their lived experiences into their leadership development process.

PERFORMANCE EVALUATION AND COMPENSATION MANAGEMENT

Course Outcomes:

- Recognize how pay decisions help the organization achieve a competitive advantage.
- Analyze, integrate, and apply the knowledge to solve compensation related problems in organizations.
- Demonstrate comprehension by constructing a compensation system encompassing; 1) internal consistency, 2) external competitiveness 3) employee contributions, 4) organizational benefit systems, and 5) administration issues.
- Design rational and contemporary compensation systems in modern organizations.

HUMAN CAPITAL MANAGEMENT

Course Outcomes:

- About the new trends in human capital management
- About the work, competencies tasks and organization of Human Resource Specialist
- About basic processes related to Human Capital Management human capital potential and assessment and planning
- Recruiting and keeping proper candidate usage of human capital in organization and proper attitude toward human capital potential (openness to new trends)
- Better understanding of differences in human capital potential

MANPOWER PLANNING, RECRUITMENT, AND SELECTION

Course Outcomes:

- Integrated perspective on role of HRM in modern business. Ability to plan human resources and implement techniques of job design
- Competency to recruit, train, and appraise the performance of employees
- Rational design of compensation and salary administration
- Ability to handle employee issues and evaluate the new trends in HRM

IV Semester

Supply Chain Management and Analytics

Course Outcomes:

- Develop a sound understanding of the important role of supply chain management in today's business environment
- Become familiar with current supply chain management trends Understand and apply the current supply chain theories, practices and concepts utilizing case problems and problem-based learning situations
- Learn to use and apply computer-based supply chain optimization tools including the use of selected state of the art supply chain software suites currently used in business
- Develop and utilize critical management skills such as negotiating, working effectively within a diverse business environment, ethical decision making and use of information technology
- Demonstrate the use of effective written and oral communications, critical thinking, team building and presentation skills as applied to business problems

International HRM

Course Outcomes:

- Demonstrate an understanding of key terms, theories/concepts and practices within the field of IHRM
- Obtain, through elective courses, an in-depth knowledge of specific IHRM-related theories, skills and practices
- Appreciate the implications of increasing globalization for the management of human resources, with particular reference to IHRM in multinational corporations
- Develop and ability to undertake qualitative and quantitative research and apply this knowledge in the context of an independently constructed work (i.e. dissertation)
- Identify and appreciate the significance of ethical issues in HR practices and the management of people in the workplace.

Employee Relations and Engagement

Course Outcomes:

- Identify and describe the meaning of employee engagement and its different components
- Appreciate the strategic issues associated with employee engagement

- Describe the changes in systems of employee relations
- Appreciate the impact of structures of management and ownership on employee engagement
- Reflect on the current state of employee engagement in an organisation.

Strategic HRM

Course Outcomes:

- Identify the key HRM functions and operations;
- Define, explain, illustrate and reason with the key human resource management concepts;
- Identify the linkages between HRM functions and operations and organisational strategies, structures and culture;
- Reflect and comment in a way that demonstrates awareness of the different contexts that impact on the operation of HRM; and
- Exhibit behaviour and performance that demonstrates enhanced competence in decision-making, group leadership, oral and written communication, critical thinking, problem-solving, planning and team work.

Financial Derivatives

Course Outcomes:

- Students who complete this program will be able understand financial innovations in equity and debt market.
- By the end of the program students will able to price the options ,futures and swaps using various models
- Graduates of the program will able to understand implications in using financial derivatives with special references to various cases
- Identifying main factors affecting the price of the considered instruments and basic techniques leading to no- arbitrage pricing of derivatives with the basic relationships between adjacent instruments.
- Understanding the methods and principles of the mathematical theory of finance as the foundation for options pricing.

Global Financial Management

Course Outcomes:

- Identify the operations of the developed global financial markets, the trading of financial instruments, and the role of regulatory bodies
- Apply competences with financial analytical skills required to evaluate the performance of the firm, including the interpretation of financial data

- Evaluate the financial instruments used in the equity and debt markets for funding the corporation
- Critically analyse the issues underlying the capital structure theory and practices to achieve the optimal debt to equity ratio
- Discuss advanced topics in corporate financial management including specialized topics such as international investments, foreign exchange management, and global portfolio management

Financial Risk Management Course Outcomes:

- Identify the key components of the Basel II framework;
- Be able to analyze market risk on a stand-alone basis applying framework and ways to manage market risk;
- Be able to analyze credit risk on a stand-alone basis applying a number of different approaches and ways to manage credit risk;
- Be able to analyze operational risk using the standardized approach and ways to manage operational risk;
- Develop a general risk management strategy for a financial institution;

Strategic Financial Management Course Outcomes:

- Demonstrate the applicability of the concept of Financial Management to understand the managerial Decisions and Corporate Capital Structure
- Apply the Leverage and EBIT EPS Analysis associate with Financial Data in the corporate
- Analyze the complexities associated with management of cost of funds in the capital Structure
- Demonstrate how the concepts of financial management and investment, financing and dividend policy decisions could integrate while identification and resolution of problems pertaining to LSCM Sector
- Demonstrate how risk is assessed

CALCULUS AND DIFFERENTIAL EQUATIONS

Course Outcomes: At the end of the course, the student will be able to

- Utilize mean value theorems to real life problems (L3)
- Solve the differential equations related to various engineering fields (L3).
- Familiarize with functions of several variables which are useful in optimization (L3)
- Apply double and triple integration techniques in evaluating areas and volumes bounded by region (L3)
- Conclude the use of Beta and Gamma functions in evaluating improper integrals (L4)

ENGINEERING CHEMISTRY

Course Outcomes: At the end of this unit, the students will be able to

- Analyze the different types of composite plastic materials and interpret the mechanism of conduction in conducting polymers.
- Utilize the theory of construction of electrodes, batteries and fuel cells in redesigning new engineering products and categorize the reasons for corrosion and study methods to control corrosion
- Synthesize nanomaterials for modern advances of engineering technology. Summarize the techniques that detect and measure changes of state of reaction. Illustrate the commonly used industrial materials.
- Differentiate petroleum, petrol, synthetic petrol and have knowledge how they are produced. Study alternate fuels and analyse flue gases.
- Analyze the suitable methods for purification and treatment of hard water and brackish water.

PROBLEM SOLVING AND PROGRAMMING USING C

Course Outcomes: At the end of the Course, Student should be able to:

- B. Tech (R20) UCEV (Autonomous) w.e.f 2020-21 Illustrate the Fundamental concepts of Computers and basics of computer programming.
- Use Control Structures and Arrays in solving complex problems.
(iv) Develop modular program aspects and Strings fundamentals.
- Demonstrate the ideas of pointers usage.
- Solve real world problems using the concept of Structures, Unions and File operations.

ENGINEERING DRAWING

Course Outcomes: The students should be able to:

- To make the student familiar with the techniques used for drawing various geometric elements used in engineering practice
- The student can apply the orthographic projections, project the points and lines parallel to one plane and inclined to both the planes.
- Prepare the drawings for construction of regular polygons and the projection of the planes inclined to both the planes.
- The students can prepare the drawings for the projections of the various types of solids in different positions inclined to one plane of the planes
- Ability to use the concepts of isometric views to orthographic views and vice-versa.

BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

Course Outcomes: The student should be able to:

- Understand the basics of series and parallel electrical circuits.
- Understand the operation and performance of DC machines and testing of DC shunt motor by Swinburne's test and brake test.
- Principle of operation, construction and performance of AC machines (transformers, synchronous machines and 3-phase & 1-phase induction motors) understand the concept of semiconductor diodes, operation of half wave, full wave bridge rectifiers, characteristics and applications of Zener diode.
- Analyze the concept of transistors and amplifiers

BASIC ELECTRICAL AND ELECTRONICS ENGINEERING LAB

Course Outcomes: The student should be able to:

- Compute the efficiency of DC shunt machine with/without loading the machine.
- Estimate the efficiency at different load conditions and power factors for single phase transformer with OC and SC tests.
- Analyze the performance characteristics of 3-Phase induction motor.
- Control the speed of dc shunt motor using armature voltage and field flux control methods.

ENGINEERING CHEMISTRY LAB

Course Outcomes:

- Student is exposed to volumetric titrations acquires some volumetric skills.
- Student is able to analyze hard and soft water.
- Student is exposed to volumetric skills of red-ox titrations with different indicators
- Students can handle the instruments like conductometer, potentiometer in determining the concentrations of acids and bases.
- Student is able to analyze the different chemical concentrations using colorimeter and PH meter.

PROBLEM SOLVING AND PROGRAMMING USING C LAB

Course Outcomes:

- Implement basic programs in C and design flowcharts in Raptor.
- Use Conditional and Iterative statements to solve real time scenarios in C.
- Implement the concept of Arrays and Modularity and Strings.
- Apply the Dynamic Memory Allocation functions using pointers.
- Develop programs using structures, and Files.

R20

I B. TECH II SEM

CO'S

LINEAR ALGEBRA AND NUMERICAL METHODS**Course Outcomes: The student will be able to**

- Develop the use of matrix algebra techniques that is needed by engineers for practical applications (L6)
- Solve system of linear algebraic equations using Gauss elimination, Gauss Jordan, Gauss Seidel (L3)
- Evaluate approximating the roots of polynomial and transcendental equations by different algorithms (L5)
- Apply Newton's forward & backward interpolation and Lagrange's formulae for equal and unequal intervals (L3)
- Apply different algorithms for approximating the solutions of ordinary differential equations to its analytical computations (L3)

ENGINEERING PHYSICS**Course Outcomes: The students should be able to**

- Understand the concepts of physical optics through the wave nature of light and discuss the phenomenal differences between interference, diffraction and polarization.
- Describe the basic laser physics, working of lasers, and principle of propagation of light in optical fibers.
- Explain the basics of dielectric and magnetic materials to synthesize new materials as per needs of engineering applications.
- Apply the knowledge of Ultrasonic to understand non destructive testing and analyze

acoustic properties of typically used materials in buildings

- Recognize various planes in a crystal and describe the structure determination using x-rays.

COMMUNICATIVE ENGLISH

Course Outcomes: At the end of the module, the learners will be able to

- Understand social or transactional dialogues spoken by native speakers of English and identify the context, topic, and pieces of specific information
- Ask and answer general questions on familiar topics and introduce oneself/others
- (iii)Employ suitable strategies for skimming and scanning to get the general idea of a text
 - and locate specific information
- Recognize paragraph structure and be able to match beginnings/endings/headings with paragraphs
- Form sentences using proper grammatical structures and correct word forms

ENGINEERING MECHANICS

Course Outcomes :The students should be able to:

- To learn the principles (Axioms) of statics, able to find resultant & resolution of system of forces and resultant force.
- Explore the concepts of constraints, free body diagram and action-reaction. (iii)Estimate the geometric parameters like centroid, centre of gravity and moment of inertia and identify their application.
- Learn the analysis of frames and trusses and know the importance of friction.
- Able to determine solution to dynamic problems through D'Alembert equilibrium equations, Impulse-Momentum and work– energy met

COMPUTER AIDED ENGINEERING DRAWING

Course Outcomes: The students should be able to learn:

- The concepts of projections of solids inclined to both the planes
- The concepts of sections of solids and developments of surfaces
- The interpenetration of right regular solids.
- Basics in AutoCAD. v. Concepts of view points and view ports and draw 2D and 3D objects using edit commands in AutoCAD.
- Computer aided solid modeling techniques

Engineering Physics Lab

Course outcomes: The students will be able to

- Describe the methodology of science and the relationship between observation and theory
- Develop scientific problem solving skills, including organization of given information, identification and application of pertinent principles, quantitative solutions, interpreting results, and evaluating the validity of results.
- Discover of physics concepts in other disciplines such as mathematics, computer science, engineering, and chemistry.
- Learn to minimize contributing variables and recognize the limitations of equipment.
- Apply conceptual understanding of the physics to general real-world situations. Develop interpersonal and communication skills including communicating in small groups, writing, working effectively with peers.

English Communication Skills Lab

Course Outcomes: At the end of the module, the learners will be able to

- The learner will improve phonetic understanding, transcription, common errors both in pronunciation and written English.
- The learner will improve syllabic division, and how to use right stress in their pronunciation.
- The learner will improve speaking skills with right intonation and rhythm and intonation and how to reduce mother tongue influence in English.
- The learner will Improve speaking skills as well as listening skills by listening through the audio clips prescribed.
- The learner will Improve speaking skills along with reading skills.

ENGINEERING WORKSHOP PRACTICE

Course Outcomes: The students should be able to:

- Understand and practice Carpentry tools and trade.
- Apply various types of Fitting tools and practice the trade
- Understand and practice Black Smithy tools and trade
- Apply concepts of House Wiring trade
- Analyze working of various tools of Tin Smithy trade
- Understand the basic hardware of computer

ENVIRONMENTAL SCIENCE

Course Outcomes: The students should be able to:

- Gain a higher level of personal involvement and interest in understanding and solving ' environmental problems
- Comprehend environmental problems from multiple perspectives with emphasis on human modern lifestyles and developmental activities
- Demonstrate knowledge relating to the biological systems involved in the major global environmental problems of the 21st century.

Vector Calculus, Transforms and PDE

Course Outcomes: Upon the successful completion of this course, the students will be able to:

- Interpret the physical meaning of different operators such as gradient, curl and divergence
- Estimate the work done against a field, circulation and flux using vector calculus
- Apply the Laplace transform for solving differential equations
- Find or compute the Fourier series of periodic signals
- Know and be able to apply integral expressions for the forwards and inverse Fourier transform to a range of non-periodic waveforms

STRENGTH OF MATERIALS

Course Outcomes: Upon the successful completion of this course, the students will be able to:

- Study the basic materials behaviour under the influence of different external loading conditions and the support conditions
- Draw the diagrams indicating the variation of the key performance features like bending moment and shear forces
- Understand bending concepts and calculation of section modulus and for determination of stresses developed in the beams and deflections due to various loading conditions
- Assess stresses across section of the thin and thick cylinders to arrive at optimum sections to withstand the internal pressure using lame's equation.
- Analyze the stresses in thin and thick cylinders

FLUID MECHANICS

Course Outcomes: Upon the successful completion of this course, the students will be able to:

- Calculate the measurement of pressure
- Calculate the forces on submerged plane
- Understand Flow through long tubes, hydro dynamically smooth and rough flows.
- Measurement of Flow using Pitot tube, Venturi meter and Orifice meter
- Study the Concepts of boundary layer and characterization

SURVEYING

Course Outcomes: Upon the successful completion of this course, the students will be able to:

- To demonstrate the basic surveying skills
- To use various surveying instruments.
- To perform different methods of surveying
- To compute various data required for various methods of surveying.
- To integrate the knowledge and produce topographical map.

CONCRETE TECHNOLOGY

Course Outcomes :Upon the successful completion of this course, the students will be able to:

- Realize the importance of quality of concrete.
- Test the fresh concrete properties and the hardened concrete properties.
- Evaluate the ingredients of concrete through lab test results.
- Design the concrete mix by BIS method.
- Familiarize the basic concepts of special concrete and their production and applications.
Understand the behavior of concrete in various environments.
- Mix design of concrete

Complex Variables and Statistical.

Course Outcomes: Upon the successful completion of this course, the students will be able to:

- Apply Cauchy-Riemann equations to complex valued functions in order to determine whether a given continuous function is analytic
- Find the differentiation and integration of complex valued functions used in engineering problems and Make use of the Cauchy residue theorem to evaluate certain integrals
- Apply discrete and continuous probability distributions
- Design the components of a classical hypothesis test 5. Infer the statistical inferential methods based on small and large sampling tests

STRUCTURAL ANALYSIS

Course Outcomes: Upon the successful completion of this course, the students will be able to:

- Calculate bending moment, normal thrust and radial shear to arches
- Determine Lateral Loads by using Approximate Methods
- Analyze cables which are subjected to concentrated and uniformly distributed loads,
- Determine the behavior of continuous beams with and without sinking of supports
- Find out the stresses in frames by Matrix methods and flexibility methods

HYDRAULICS AND HYDRAULIC MACHINERY

Course Outcomes: Upon the successful completion of this course, the students will be able to:

- Solve uniform and non-uniform open channel flow problems.
- Apply the principals of dimensional analysis and similitude in hydraulic model testing.
- Understand the working principles of various hydraulic machineries and pumps.
- Determine hydrodynamic force of jets on stationary and moving flat , inclined and curved vanes .
- Pump installation details of centrifugal and reciprocating pumps

ENGINEERING GEOLOGY.

Course outcomes: Upon the successful completion of this course, the students will be able to:

- Identify and classify the geological minerals
- Measure the rock strengths of various rocks
- Classify and measure the earthquake prone areas to practice the hazard zonation
- Classify, monitor and measure the Landslides and subsidence
- Prepares, analyses and interpret the Engineering Geologic maps

MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS

Course outcomes: Upon the successful completion of this course, the students will be able to:

- Equipped with the knowledge of estimating the Demand and demand elasticities
- For a product and the knowledge of understanding of the Input-Output-Cost
- Relationships and estimation of the least cost combination of inputs.
- Understand the nature of different markets and Price Output determination

GEOTECHNICAL ENGINEERING

Course Outcomes: Upon the successful completion of this course

- The student must know the definition of the various parameters related to soil mechanics and establish their inter-relationships.
- The student should be able to know the methods of determination of the various index properties of the soils and classify the soils.
- The student should be able to know the importance of the different engineering properties of the soil such as compaction, permeability
- To understand the concept of consolidation and shear strength and determine them in the laboratory.
- The student should be able to apply the above concepts in day-to-day civil engineering practice.

TRANSPORTATION ENGINEERING

Course Outcomes: Upon the successful completion of this course, the students will be able to:

- Plan highway network for a given area.
- Determine Highway alignment and design highway geometrics.
(iii) Design Intersections and prepare traffic management plans.
- Judge suitability of pavement materials and design flexible and rigid pavements.
- Construct and maintain highways

DESIGN AND DRAWING OF REINFORCED CONCRETE STRUCTURES

Course Outcomes: At the end of this course the student will be able to

- Work on different types of design philosophies
- Carryout analysis and design of flexural members and detailing
- Design structures subjected to shear, bond and torsion
- Design different type of compression members and footings

FUNDAMENTALS OF ENTREPRENEURSHIP

Course learning outcomes: At the end of this course the student will be able to

- The student shall be equipped with the required entrepreneurial knowledge and skill to start a business.
- The student shall be motivated towards entrepreneurial process, innovative and lateral thinking.
- The student will understand the characteristics of entrepreneur
- The student will be able to know types of entrepreneurs, entrepreneurial culture and entrepreneurial process
- The student will have sound knowledge of conducting entrepreneurship development program

EARTHQUAKE ENGINEERING.

Course Outcomes: At the end of this course the student will be able to

- The students will gain an experience in the implementation of Earthquake Engineering on engineering concepts which are applied in field Structural Engineering.
- The students will get a diverse knowledge of earthquake engineering practices applied to real life problems
- The students will learn to understand the theoretical and practical aspects of earthquake engineering along with the planning and design aspects
- The students will learn Analysis, Designing and Detailing Structure Considering Earthquake Loads.
- The students will learn to understand the Classroom participation and involvement in solving the problems.

AIR POLLUTION AND CONTROL

Course Learning Outcomes: By the end of successful completion of this course, the students will be able to

- Have knowledge on the NAAQ standards and air emission standards Differentiate the treatment techniques used for sewage and industrial wastewater treatment methods.
- Understand the fundamentals of solid waste management, practices adopted in his town/village and its importance in keeping the health of the city.
- Appreciate the methods of environmental sanitation and the management of community facilities without spread of epidemics.
- Appreciate the importance of sustainable development while planning a project or executing an activity.

URBAN HYDROLOGY

Course Outcomes: At the end of the course the student will be able to

- Develop intensity duration frequency curves for urban drainage systems.
- Develop design storms to size the various components of drainage systems.
- Apply best management practices to manage urban flooding.
- Prepare master drainage plan for an urbanized area.
- Practice best management in urban drainage.

SOLID WASTE & HAZARDOUS WASTE MANAGEMENT

Course Learning Outcomes: Upon successful completion of this course, the students will be able to:

- Design the collection systems of solid waste of a town
- Design treatment of municipal solid waste and landfill and to know the criteria for selection of landfill
- To characterize the solid waste and design a composting facility Processing and composting the municipal organic waste.

ADVANCED STRUCTURAL ANALYSIS

Course Outcomes: At the end of this course; the student will be able to

- Differentiate Determinate and Indeterminate Structures
- Analyze the load effect on arches
- Carryout lateral Load analysis of structures
- Analyze Cable and Suspension Bridge structures
- Analyze structures using Moment Distribution, Kani' s Method and Matrix methods

GEOTECHNICAL ENGINEERING LAB

Course Outcomes: Upon successful completion of this course, student will be able to

- Determine index properties of soil and classify them.
- Determine permeability of soils.
- Determine Compaction, Consolidation and shear strength characteristics.
- Determine shear for soil sample
- Determine CBR of soil sample

GEOTECHNICAL ENGINEERING LAB

Course Outcomes: Upon successful completion of this course, student will be able to

- Determine index properties of soil and classify them
- Determine permeability of soils.
- Determine Compaction, Consolidation and shear strength characteristics.
- Determine shear for soil sample
- Determine CBR of soil sample

DISASTER MANAGEMENT Mandatory course (AICTE suggested)

Course Learning Outcomes: The students will be able to

- Differentiate the types of disasters, causes and their impact on environment and society. Assess vulnerability and various methods of risk reduction measures as well as mitigation.
- Draw the hazard and vulnerability profile of India, Scenarios in the Indian context
- To analyze the Components in Preparedness, Risk Assessment, Response and Recovery Phases of Disaster – Disaster Damage Assessment.
- Understand about Risk Assessment, Response and Recovery Phases of Disaster – Disaster Damage Assessment.



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