

B.E. MECHANICAL ENGINEERING (FOUR YEAR PROGRAMME)

Semester-III ETBS301: ENGINEERING MATHEMATICS III

Course outcome

At the end of the course the students will be able to acquire knowledge on

- 1 Partial differential equations.
- 2 Fourier series.
- 3 Fourier transform.
- 4 Z-transforms and the methods of solving them.
- 5 Solving boundary value problems.

Semester-III ETES302: ENVIRONMENTAL STUDIES

Course outcome

At the end of the course the students will be able to acquire knowledge on

- 1 Gain public awareness of environment at infant stage.
- 2 Gain basic knowledge on the significance of environmental studies
- 3 Develop their standard of living
- 4 Understand the effects of environmental disasters.
- 5 Understand Human rights

Semester-III CEES303: ENGINEERING MATHEMATICS

Course outcome

At the end of the course the students will be able to acquire knowledge on

- 1.1 Understand the concepts of co-ordinate systems.
- 2 Analyze the three-dimensional motion.
- 3 Understand the concepts of rigid bodies.
- 4 Analyze the free-body diagrams of different arrangements.
- 5 Analyze torsional motion and bending moment.

Semester-III MEES304: BASIC ELECTRONIC ENGINEERING

Course outcome

At the end of the course the students will be able to acquire knowledge on

- 1 Understand the principles of semiconductor devices and their applications.
- 2 Design an application using Operational amplifier.
- 3 Understand the working of timing circuits and oscillators.
- 4 Understand logic gates, flip flop as a building block of digital systems.
- 5 Learn the basics of Electronic communication system.

Semester-III MEPC305: THERMODYNAMICS

Course outcome

At the end of the course the students will be able to acquire knowledge on

- 1 Apply energy balance to systems and control volumes, in situations involving heat and work interactions
- 2 Evaluate changes in thermodynamic properties of substances
- 3 Evaluate the performance of energy conversion devices
- 4 Differentiate between high grade and low grade energies.
- 5 Learn various thermodynamic cycles

Semester-III MEPC306: SOLID MECHANICS

Course outcome

At the end of the course the students will be able to acquire knowledge on

1. Learn the basics of stress and strain
2. Learn the significance of Hooks law.
3. Understand the deformation behavior of solids under different types of loading and obtain mathematical solutions for simple geometries.
4. Understand the stress behavior on cylindrical surfaces
5. Learn the basics of plasticity.

Semester-III **MESP307: ELECTRONICS LAB**

Course outcome

At the end of the course the students will be able to acquire knowledge on

1. Learn the application and characteristics of basic electronic devices.
2. Gain knowledge to troubleshoot various electronic circuits.
3. Understand the functional characteristics of linear IC as a rectifiers, converters and amplifiers.
4. Acquire the operating theory of combinational and sequential circuits.
5. Explore the use of digital logic in integrated circuit applications.

Semester-III **MECP308 : THERMAL LAB**

Course outcome

At the end of the course the students will be able to acquire knowledge on

1. Understand the various types of engines
2. Learn the working principles of dynamometers.
3. Know the dismantling and assembling procedure of a four stroke CI engines.
4. Determine kinematic viscosity and the influence of temperature on viscosity.
5. Determine the properties of fuels

Semester-III **MECP309: MACHINE DRAWING**

Course outcome

At the end of the course the students will be able to acquire knowledge on

1. Improve their imagination skills
2. Improve their drawing skills
3. Understand and apply the knowledge of machine drawing as a system of communication in which ideas are expressed clearly and all information fully conveyed.
4. Understand the design of a system, component or process to meet desired needs within realistic constraints such as manufacturability, economic, environmental, safety & sustainability etc., to represent a part drawing and assembly drawings.
5. Recognize the need and an ability to engage in self education and life-long learning.

Semester-IV **EEBS401: PROBABILITY RANDOM PROCESS AND NUMERICAL METHODS**

Course outcome

At the end of the course the students will be able to acquire knowledge on

1. Acquire skills in handling situations involving random variables
2. Able to solve problems on random processes
3. Solve problems using numerical methods.
4. Solve problems on integration
5. Solve problems on differential equations

Semester-IV **MEES402: SOFT SKILLS DEVELOPMENT**

Course outcome

At the end of the course the students will be able to acquire knowledge on

1. Understand the human values
2. Develop Interpersonal relationship

3. Improve their communication skills
4. Handle time and stress effectively
5. Plan their carrier

Semester-IV **MEPC403 STRENGTH OF MATERIALS**

Course outcome

At the end of the course the students will be able to acquire knowledge on

1. Recognize various types loads applied on machine components of simple geometry
2. Understand the nature of internal stresses developed within the components
3. Evaluate the strains and deformation that will result due to the elastic stresses developed within the materials for simple types of loading
4. Learn the basics of torsional stresses
5. Understand the effects of axial stresses

Semester-IV **MEPC404 FLUID MECHANICS & FLUID MACHINES**

Course outcome

At the end of the course the students will be able to acquire knowledge on

1. Learn the basics of fluid mechanics
2. Analyze simple flow situations mathematically
3. Understand the significance of dimensionless parameters
4. Gain knowledge about the functions of fluid machines
5. Able to evaluate the performance of pumps and turbines.

Semester-IV **MEPC405 MANUFACTURING PROCESSES**

Course outcome

At the end of the course the students will be able to acquire knowledge on

1. Understand the different conventional manufacturing processes
2. Learn the basics of metal cutting
3. Learn the basics of additive manufacturing
4. Introduce unconventional manufacturing methods
5. Understand advanced machining processes for a lifelong learning

Semester-IV **MEPC406 DESIGN OF MACHINE ELEMENTS**

Course outcome

At the end of the course the students will be able to acquire knowledge on

1. Appreciate the functions of various machine elements and assemblies
2. Design various machine components according to the requirement as per the prescribed standards
3. Apply the knowledge of materials and their properties
4. Use a standard design data book.
5. Understand the significance of designing joints

Semester-IV **MECP407 STRENGTH OF MATERIALS LAB**

Course outcome

At the end of the course the students will be able to acquire knowledge on

1. Analyze and design structural members subjected to tension, compression, torsion, bending and combined stresses
2. Learn the fundamental concepts of stress, strain and elastic behavior of materials.

3. Utilize appropriate materials in design considering engineering properties, sustainability, cost and weight.
4. Perform engineering work in accordance with ethical and economic constraints related to the design of structures and machine parts.
5. Work as a team to gain practical knowledge, helpful for a lifelong learning.

Semester-IV **MECP408 HYDRAULICS LAB**

Course outcome

At the end of the course the students will be able to acquire knowledge on

1. Determine the properties of fluids, pressure and their measurements.
2. Measure flow in pipes and determine frictional losses.
3. Compute forces on immersed plane and curved plates applying continuity equation and energy equation in solving problems on flow through conduits.
4. Determine the characteristics of pumps
5. Determine the characteristics of turbines.

Semester-IV **MECP409 MANUFACTURING LAB 1**

Course outcome

At the end of the course the students will be able to acquire knowledge on

1. Handle metal working machine (Lathe) for making simple operations
2. Prepare green sand moulds of given patterns
3. Prepare different types of weld joints.
4. Understand non destructive testing
5. Work as a team for a lifelong learning

Semester-V **MEPC501 MATERIALS ENGINEERING**

Course outcome

At the end of the course the students will be able to acquire knowledge on

1. Identify crystal structures for various materials
2. Understand the defects in materials
3. Understand how to tailor material properties of ferrous and non-ferrous alloys
4. Learn the effects of heat treatment in steels
5. How to quantify mechanical integrity and failure in materials

Semester-V **MEPC502 INSTRUMENTATION & CONTROL**

Course outcome

At the end of the course the students will be able to acquire knowledge on

1. Learn basic measurement systems
2. Design and maintain measuring equipments for the measurement of temperature and flow
3. Work in quality control and quality assurances divisions in industries
4. Design a sensors and transducers used for stress analysis.
5. Understand the significance of transfer functions.

Semester-V **MEPC503 MANUFACTURING TECHNOLOGY**

Course outcome

At the end of the course the students will be able to acquire knowledge on

1. Understand the tooling needed for manufacturing.
2. Learn the various precise measurements

3. Understand the various material handling devices.
4. Apply optimization methods in manufacturing.
5. Learn the significance of forecasting in manufacturing.

Semester-V **MECP504 KINEMATICS AND THEORY OF MACHINES**

Course outcome

At the end of the course the students will be able to acquire knowledge on

1. Design various types of linkage mechanisms
2. Determine specific motion and analyze them for optimal functioning
3. Learn the significance of cam and followers
4. Learn the basics of governors
5. Understand the need for balancing

Semester-V **MECP507 MANUFACTURING LAB - II**

Course outcome

At the end of the course the students will be able to acquire knowledge on

1. Understand the usage of precision instruments and the handling methods.
2. Learn the basic operation of various traditional and non-traditional manufacturing processes.
3. Justify the most appropriate manufacturing process and material for a given product.
4. Select/Suggest process for the production of gears.
5. Work as a team to gain knowledge for a lifelong learning.

Semester-V **MECP508 MACHINE THEORY LAB**

Course outcome

At the end of the course the students will be able to acquire knowledge on

1. Determine the mass moment of inertia of connecting rod and flywheel either experimentally or theoretically or both.
2. Understand the working principle of governors.
3. Calculate the stiffness of springs.
4. Analyze the different types of motion in cams.
5. Ability to analyze particle dynamics

Semester-V **MECP509 INSTRUMENTATION & CONTROLS LAB**

Course outcome

At the end of the course the students will be able to acquire knowledge on

1. Classify various temperature measuring devices
2. Determine the coefficient of discharge of various flow measuring devices.
3. Understand the concept of proportional control action, integral control action and derivative control action in a control system.
4. Measure the procedure for measuring strain using strain gauge.
5. Work as a team to gain knowledge for a lifelong learning

Semester-VI **MECP601 AUTOMATION IN MANUFACTURING**

Course outcome

At the end of the course the students will be able to acquire knowledge on

1. Understand the basics of CAD/CAM
2. Able to classify NC and CNC
3. Learn the basics of CAD

4. Learn the advanced topics in manufacturing
5. Understand the importance of modeling and simulation

Semester-VI **MEPC602 APPLIED THERMODYNAMICS**

Course outcome

At the end of the course the students will be able to acquire knowledge on

1. Learn various types of fuels
2. Understand various practical power cycles and heat pump cycles.
3. Learn the basics of compressible flow
4. Analyze energy conversion in various thermal devices such as combustors, air coolers, nozzles, diffusers, steam turbines and reciprocating compressors
5. Understand the phenomena occurring in high speed compressible flows.

Semester-VI **MECP607 APPLIED THERMAL LAB**

Course outcome

At the end of the course the students will be able to acquire knowledge on

1. Learn about the different heat losses in the engine viz., cooling water, exhaust gas and unaccountable losses.
2. To learn about the performance parameter of Diesel and Petrol engine.
3. To learn about the air compressor performance parameters.
4. Understand the basic analysis of any refrigeration system
5. Work as a team to gain knowledge for a lifelong learning.

Semester-VI **MECP608 AUTOMATION LAB**

Course outcome

At the end of the course the students will be able to acquire knowledge on

1. Attempt the basics in MS office
2. Write and compile programmes in C++
3. Develop assembly drawings with different views using auto cad
4. Exchange file formats between AutoCAD & other analysis packages
5. Solve simple mathematical models using MATLAB.

Semester-VII **ETHS701 ENGINEERING ETHICS**

Course outcome

At the end of the course the students will be able to acquire knowledge on

1. Understand the relationship between the engineer and the society.
2. Learn the importance of codes in engineering practice.
3. Acquire knowledge on the legal, moral and ethical aspects in engineering.
4. Understand the various rights of engineers
5. Understand the importance of honesty

Semester-VII **MEPC702 HEAT TRANSFER**

Course outcome

At the end of the course the students will be able to acquire knowledge on

1. Formulate and analyze a heat transfer problem involving any of the three modes of heat transfer
2. Obtain exact solutions for the temperature variation using analytical methods
3. Design devices such as heat exchangers and also estimate the insulation needed
4. Learn the basics of radiation shields

5. Learn the basics of mass transfer.

Semester-VII **MECP706 HEAT TRANSFER LAB**

Course outcome

At the end of the course the students will be able to acquire knowledge on

1. Calculate the temperature distribution and heat conduction in the metal rod.
2. Evaluate the radiation heat transfer between surfaces.
3. Analyze the performance of heat exchanger.
4. Working of Solar Thermal plants: Flat Plate, Vacuum Tubes, Parabolic Trough and Concentric Mirrors.
5. Experimentally determine the performance of a steam boiler, turbine and condenser.

Semester-VIII **MEPV803 PROJECT WORK & VIVA VOCE**

Course outcome

Upon completing this course, students should be able to:

1. Take up any challenging practical problems and find solution by formulating proper methodology.
2. Students will acquire the ability to make links across different areas of knowledge and to generate, develop and evaluate ideas and information so as to apply these skills to the project task.
3. Students will acquire collaborative skills through working in a team to achieve common goals.
4. Students will be able to learn on their own, reflect on their learning and take appropriate actions to improve it.
5. Students will acquire the skills to communicate effectively and to present ideas clearly and coherently to specific audience in both the written and oral forms.

PROFESSIONAL ELECTIVE COURSES

MEPESCN - INTERNAL COMBUSTION ENGINES

COURSE OUTCOMES

Upon completing this course, students should be able to:

1. Learn the working of latest engines
2. Understand the various working cycles
3. Understand the combustion phenomenon
4. Study the fuel supply system in an engine
5. Analyze the performance of an engine

MEPESCN - MECHATRONIC SYSTEMS

COURSE OUTCOMES

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

1. Design a Mechatronics Systems
2. Handle Microprocessor, PLC and other Electrical and Electronics Circuits.
3. Gain knowledge related to Electronic circuits
4. Learn the functions of actuators
5. Learn the applications of mechatronic systems

MEPESCN - MICROPROCESSORS IN AUTOMATION

COURSE OUTCOMES

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

1. Able to perform numerical conversions
2. Learn the basic elements of microprocessor
3. Understand the working of basic 8085 microprocessor
4. Write assembly language programs

5. Provide good idea of the use of microprocessors in automation.

MEPESCN - COMPOSITE MATERIALS

COURSE OUTCOMES

Upon completion of this course, the students will be able to

1. Know the basics of composites
2. Learn the rules for attaining a good composite
3. Understand the various methods of composites manufacture
4. Learn the powder metallurgy technique
5. Learn the properties of ceramic composites

MEPESCN - COMPUTER AIDED DESIGN AND MANUFACTURING

COURSE OUTCOMES

Upon completion of this course, the students will be able to

1. Learn the fundamentals of CAD
2. Use computer and CAD software for modeling mechanical components
3. Check CAD standards
4. Understand the basics of computer aided manufacturing
5. Understand the basics of computer integrated manufacturing

MEPESCN- REFRIGERATION AND AIR CONDITIONING

COURSE OUTCOMES

Upon completion of this course the student will able to

1. Understand the components of refrigeration and air conditioning systems
2. Understand the psychrometry of mixture of water vapor and air.
3. Understand the working principles of refrigeration and air-conditioning systems.
4. Understand the need for pure air
5. Know the current trends in HVAC systems

MEPESCN - FINITE ELEMENT ANALYSIS

COURSE OUTCOMES

Upon completion of the course, students will be able to

1. Understand the FEM formulation
2. Solve simple structural and thermal problems
3. Formulate problems on natural vibrations
4. Generate problems on torsional objects
5. Introduce software available for analysis

MEPESCN - POWER PLANT ENGINEERING

COURSE OUTCOMES

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

1. Understand the principles of operation of coal based power plant
2. Learn the working of gas power plants
3. Basics of nuclear reactors
4. Understand various non conventional power plants
5. Gain knowledge on power plant economics.

MEPESCN - GAS DYNAMICS AND JET PROPULSION

COURSE OUTCOMES

Upon completion of this course, the students will be able to

1. Understand the basics of gas dynamics
2. Learn the basics of non-isentropic flow
3. Understand the need for shocks
4. Learn the operating principle of jet operation
5. Apply gas dynamics principles to jet and space propulsion systems

MEPESCN - PROCESS PLANNING AND COST ESTIMATION

COURSE OUTCOMES

Upon completion of this course, the students will be able to

1. Understand the basics of process planning
2. Detain economics of process planning
3. Learn the economics of cost estimation
4. Calculate machining time
5. Calculate production cost

MEPESCN - PRINCIPLES OF MANAGEMENT

COURSE OUTCOMES

Upon completion of this course, the students will e able to

1. Gain knowledge on the current trends in management
2. Learn the purpose of planning
3. Understand the need for organizing
4. Learn various leadership theories
5. Apply computers in management for an effective organization

MEPESCN AUTOMOBILE ENGINEERING

COURSE OUTCOMES

Upon completion of this course, students will be able to

1. Gain the basics of automobile
2. Learn the fuel injection systems used in CI and SI engines
3. Learn the transmission systems
4. Learn various braking systems used in automobiles
5. Gain knowledge in the present trends in automobiles

MEPESCN DESIGN OF TRANSMISSION SYSTEMS

COURSE OUTCOMES

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

1. Develop knowledge on the functions of various transmission elements.
2. Understand prerequisite for design of various transmission components.
3. Implement the basic engineering knowledge.
4. Work in the design team analyzing difficulties.
5. Design and develop solutions of various elements.

MEPESCN TOTAL QUALITY MANAGEMENT

COURSE OUTCOMES

Upon completion of this course, the students will be able to

1. Learn the basics of TQM
2. Understand the principles of TQM
3. Understand six sigma concept
4. Learn the tools and techniques of TQM
5. Know quality standards

MEPESCN ENERGY CONSERVATION AND MANAGEMENT COURSE OUTCOMES

Upon completion of this course, the students will be able to

1. Understand the world power scenario
2. Learn the scope for energy conservation
3. Perform energy audit in thermal systems
4. Perform energy auditing for the energy consumption of industries.
5. Learn the energy economics

OPEN ELECTIVE COURSES

MEOESCN AUTOMOTIVE ENGINEERING COURSE OUTCOMES

Upon completion of this course, students will be able to

1. Gain the basics of automobile
2. Learn the fuel injection systems used in CI and SI engines
3. Learn the transmission systems
4. Learn various braking systems used in automobiles
5. Gain knowledge in the present trends in automobiles.

MEOESCN AUTOMOTIVE SAFETY COURSE OUTCOMES

The students should be able to:

1. Importance of safety in a automobile.
2. Know about the concept of crumple zone, and also the effect of acceleration and deceleration of the vehicle in the compartment of the vehicle.
3. Know the various types of safety aspects such as active and passive safety, the active safety components and the working passive safety components such as air bags, seat belts
4. Know the working of the compartment while moving of the vehicle, about the collapsible steering and tiltable steering column, about the collision avoidance system, front and rear object detection.
5. Know about the rear vehicle detection system, and the braking system, the comfort and convenience system for the vehicle such as central locking system, garage door opening system and about the environment information system.

MEOESCN ELECTRIC AND HYBRID VEHICLES COURSE OUTCOMES

Upon completion of this course, students will have deep knowledge on

1. Need for alternative systems
2. Basic of hybrid and electric vehicles
3. Different energy storage devices
4. Concepts of hybrid electric drive train
5. Electric motors and controllers

MEOESCN COMPUTATIONAL FLUID DYNAMICS

COURSE OUTCOMES

At the end of the course student can able to

1. Gain deep knowledge on the governing equations used in CFD
2. Understand the fundamentals of CFD
3. Able solve simple problems
4. Understand various algorithms used
5. Able to solve problems in CFD

MEOESCN FINITE ELEMENT METHODS

COURSE OUTCOMES

At the end of the course student can able to

1. Gain the basics of finite element analysis
2. Formulate problems in FEA
3. Understand the procedure of FEM
4. Analyze one dimension and two dimension problems
5. Understand the subject for a lifelong learning

MEOESCN ENERGY MANAGEMENT IN BUILDINGS

COURSE OUTCOMES

Upon completion of the course, students will be able to

1. Understand the needs for modern living
2. Select proper materials for a effective energy management
3. Effectively manage energy in buildings
4. Understand the basics of HVAC system
5. Calculate the various building loads effectively

MEOESCN RENEWABLE ENERGY TECHNOLOGY

COURSE OUTCOMES

Upon completion of the course, students will be able to

1. Emphasis the current energy status and role of renewable energy sources.
2. Understand the various aspects of Solar energy and its utilization
3. Realize the significance of wind energy
4. Understand the bio energy conversion techniques
5. Learn the renewable energy resources

MEOESCN INDUSTRIAL POLLUTION PREVENTION AND CONTROL

COURSE OUTCOMES

Upon completion of the course, students will be able to

1. Know the various methods available to suppress industrial pollution
2. Know the effects of water and air pollution
3. Know the various environmental regulations
4. Know the methods of mitigating air pollution
5. Know the basic principles of water treatment

MEOESCN POWER PLANT INSTRUMENTATION

COURSE OUTCOMES

Upon completion of the course, students will be able to

1. Gain detailed knowledge on thermal power plant.
2. Learn the measurements of various parameter in power plant and their control.
3. Understand the use of various analyzers in power plant
4. Know the various controls used in power plants
5. Learn the methodology of controlling turbines

MEOESCN INTRODUCTION TO HYDRAULICS AND PNEUMATICS COURSE OUTCOMES

Upon completion of the course, students will be able to

1. Understand the basics of fluid power systems
2. Learn the working of various hydraulic and pneumatic systems
3. Realize the applications of hydraulic and pneumatic systems
4. Design hydraulic circuits
5. Trouble shoot hydraulic devices

MEOESCN BASIC THERMODYNAMICS AND HEAT TRANSFER COURSE OUTCOMES

Upon completion of the course, students will be able to

1. Know the basics of thermodynamics
2. Understand the various laws in thermodynamics
3. Learn the various gas power cycles and their applications
4. Understand the basics of refrigeration and air conditioning
5. Understand the various modes of heat transfer

MEOESCN ENERGY AUDITING COURSE OUTCOMES

Upon completion of the course, students will be able to

1. Gain knowledge on the fundamentals of energy
2. Understand various energy management concepts
3. Learn the methods of energy audit and usage of instruments
4. Asses the saving opportunities
5. Analyze and report the outcome of energy audit

MEOESCN ENERGY CONSERVATION COURSE OUTCOMES

Upon completion of the course, students will be able to

1. Learn the energy conservation principles
2. Know the modes of energy conservation in steam systems
3. Identify methods for energy conservation in a hydraulic system
4. Understand the electrical conservation measures.
5. Learn the concepts of energy management

MEOESCN SOLAR ENERGY UTILIZATION COURSE OUTCOMES

Upon completion of the course, students will be able to

1. Understand the basic components and measuring devices
2. Know the operation of solar thermal energy systems

3. Understand the components of solar power plants
4. Emphasize the advantages of photovoltaic power plants
5. Learn the methods to effectively utilize solar energy in buildings

MEOESCN WASTE HEAT RECOVERY SYSTEMS AND CO GENERATION COURSE OUTCOMES

Upon completion of the course, students will be able to

1. Learn the significance of co-generation
2. Understand the economics of co generation
3. Learn the thermodynamics of waste recovery
4. Learn the various systems used for waste heat recovery
5. Familiar with the economics of waste heat recovery

MEOESCN MAINTANANCE AND SAFETY ENGINEERING COURSE OUTCOMES

Upon completion of the course, students will be able to

1. Understand the various types of maintenance
2. Understand the relationship of key concepts in reliability engineering and application to maintenance strategies in a manufacturing environment.
3. Learn the maintenance technique for mining equipments
4. Establish maintenance strategies according to system characteristics and design transition programs to implement these strategies.
5. Manage the manufacturing organization with highest possible availability with safety

MEOESCN ENGINE POLLUTION AND CONTROL COURSE OUTCOMES

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

1. Learn the sources of pollution from IC engines
2. Understand the various types of engine pollution.
3. Learn the various mechanisms of emission control.
4. Know the various emission measuring equipments.
5. Acquire the knowledge of emission standards and fuel modification in engines.

DEPARTMENT OF MECHANICAL ENGINEERING

M.E. ENERGY ENGINEERING AND MANAGEMENT (TWO YEARS PROGRAMME)

Semester-I MEEMPC11: THERMODYNAMICS AND COMBUSTION

COURSE OUTCOMES:

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

1. Gain knowledge of exergy, basic laws governing energy conversion in multi component systems and application of chemical thermodynamics.
2. Aware of advanced concepts in thermodynamics.
3. Able to present theoretical, semi-theoretical and empirical models for the prediction of thermodynamic properties.
4. Apply fundamental principles of thermodynamics to non-ideal models of numerous engineering devices
5. Understand statistical thermodynamics.

Semester-I MEEMPC12 FLUID MECHANICS AND HEAT TRANSFER

COURSE OUTCOMES:

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

COURSE OUTCOMES

Upon completion of the course, students will be able to

1. Solve fluid flow problems
2. Understand compressible and incompressible flows
3. Solve transient heat transfer problems
4. Know the concept of turbulent heat transfer
5. Employ the concepts of Heat Transfer and fluid flow in the field of energy applications.

Semester-I MEEMMC15 RESEARCH METHODOLOGY AND IPR

COURSE OUTCOMES:

At the end of this course, students will be able to

1. Understand research problem formulation.
2. Analyze research related information
3. Follow research ethics
4. Enhance their writing skills
5. Understand that today's world is controlled by Computer, Information Technology, but tomorrow world will be ruled by ideas, concept, and creativity.

Semester-I MEEMCP16 THERMODYNAMICS AND COMBUSTION LABORATORY

COURSE OUTCOMES

Upon completing this course, students should be able to:

1. Gain knowledge about the combustion principles.
2. Analyze the performance of internal combustion engines
3. Analyze the performance of steam boiler, turbine and condenser.
4. Supplement the principles learnt in kinematics and Dynamics of Machinery.
5. Work as a team to promote lifelong learning.

Semester-I MEEMCP17 COMPUTER LABORATORY

COURSE OUTCOMES:

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

1. Able to prepare slides and graphs
2. Write and compile programmes in C++
3. Develop assembly drawings with different views using auto cad
4. Solve simple mathematical models using MATLAB.
5. Write simple exercises in CATIA

Semester- II MEEMPC21 ENERGY CONSERVATION AND MANAGEMENT

COURSE OUTCOMES:

Upon completion of this course, the students will be able to

1. Perform energy auditing for the energy consumption in industries.
2. Know the different types of lightings
3. Understand the energy conservation measures
4. Understand the significance of energy conservation in major utilities
5. Learn the concept of energy economics

Semester- II MEEMPC22 CO-GENERATION AND WASTE HEAT RECOVERY SYSTEMS

COURSE OUTCOMES:

Upon completion of this course, the students will be able to

1. Acquire fundamental knowledge in co-generation.

2. Understand the applications and economics of co-generation
3. Learn the principles of waste heat recovery.
4. Learn the devices available for waste heat recovery
5. Solve real world problems and reduce the impact global warming for betterment of living things to serve healthy life.

Semester- II **MEEMCP26 SOLAR AND HEAT TRANSFER LABORATORY**

COURSE OUTCOMES:

Upon completion of this course, the students will be able to

1. Understand the behavior of a system at different operating conditions
2. Understand the various modes of heat transfer
3. Understand the working of refrigeration systems
4. Understand the usage of different refrigeration tools.
5. Learn the basics of solar energy, how to determine solar intensity, and how to estimate daily and annual solar energy potential at each location.

Semester- II **MEEMTS27 INDUSTRIAL TRAINING AND SEMINAR / MINI PROJECT**

COURSE OUTCOMES:

Upon completion of this course, the students will be able to

1. The students can face the challenges in the practice with confidence.
2. The student will be benefited by the training with managing the situation arises during the execution of works related to Mechanical Engineering.

Semester-III **MEEMPV33 PROJECT WORK & VIVA-VOCE PHASE-I**

COURSE OUTCOMES

Upon completing this course, students should be able to:

1. Understand the significance of research
2. Gain hands on experience in collection of literature
3. Improve their presentation skills
4. Enhance their thesis writing skills
5. Apply the knowledge gained from theoretical and practical courses in solving problems, so as to give confidence to be creative, well planned, organized, coordinated in their project work phase – II.

Semester – IV **MEEMPV41 PROJECT WORK & VIVA-VOCE PHASE-II**

COURSE OUTCOMES:

Upon completing this course, students should be able to:

1. Understand the significance of research
2. Gain hands on experience in collection of literature
3. Improve their presentation skills
4. Enhance their thesis writing skills
5. Apply the knowledge in solving problems, so as to give confidence to be creative, well planned, organized, coordinated project outcome of the aimed work.

PROGRAM ELECTIVES

MEEMPSCN - MEASUREMENTS AND CONTROLS IN THERMAL ENGINEERING

COURSE OUTCOMES

Upon completing this course, students should be able to:

1. Ability to acquire, apply and share in-depth knowledge in the area of thermal engineering.
2. Understand the significance of instrumentation

3. Graduates will demonstrate skills to use modern engineering tools, software and equipment to analyze and solve complex engineering problems.
4. Graduate will acquire knowledge about current issues/advances in engineering practices.
5. Learn microprocessor based instrumentation systems

MEEMPESCN - ENERGY CONVERSION TECHNIQUES

COURSE OUTCOMES

1. Learn the principles of energy conversion
2. Learn energy storage systems
3. Awareness on the existence of various mechanisms for conversion of energy from one form to another and their merits and constraints.
4. Understand the production of electrical energy from different conversion methods.
5. Understand the working of various fuel cells, their relative advantages/disadvantages.

MEEMPESCN - SOLAR ENERGY AND WIND ENERGY

COURSE OUTCOMES

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

1. Know about the exploration of nonconventional energy resources and their effective tapping technologies.
2. Model solar thermal system
3. Determine the characteristics of solar thermal system
4. Understand wind turbine aerodynamics
5. Demonstrate the working of wind energy conversion system

MEEMPESCN- BIO ENERGY CONVERSION TECHNOLOGIES

COURSE OUTCOMES

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

1. Gain vast idea of the various form of biomass availability in the earth.
2. Get complete understanding of the various biomass energy conversion technologies,
3. Understand the importance of bio mass
4. Learn the chemistry behind the combustion process.
5. Learn the economical and environmental aspects of biomass energy conversion.

MEEMPESCN- BOILER TECHNOLOGY

COURSE OUTCOMES

At the end of this course, the students will be able to

1. Gain the ability of engineering design calculations in boiler technology.
2. Attain knowledge of modern technology in boiler accessories design and heat balance calculation.
3. Understand the possible emissions from a boiler
4. Understand cooling water treatment method
5. Become excellent managers of the boiler code.

MEEMPESCN- FLUIDIZED BED SYSTEMS

COURSE OUTCOMES

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

1. Understand the working principles, merits and limitations of fluidized bed systems.
2. Understand the various regimes in fluidized bed systems
3. Understand the modes of heat transfer in fluidized bed system
4. Apply fluidized bed systems for a specific engineering application.

5. Analyze the fluidized bed system to improve and optimize its performance.

MEEMPESCN- DESIGN OF HEAT EXCHANGERS

COURSE OUTCOMES

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

1. Perform energy transfer analysis in heat exchangers.
2. Learn the types of failures in heat exchangers
3. Able to design condensers and cooling towers
4. The student with engineering equation solver and its use in heat exchanger design.
5. The student to do energy transfer analysis for research and develop energy effective systems.

MEEMPESCN - COMPUTATIONAL HEAT TRANSFER

COURSE OUTCOMES

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

1. Acquire fundamental knowledge in mathematical related to computational heat transfer in thermal engineering.
2. Solve problems using mathematical concepts.
3. Solve real world problems using numerical methods.
4. Understand the finite element methods
5. Practice software packages

MEEMPESCN - ENERGY STORAGE TECHNOLOGIES

COURSE OUTCOMES

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

1. Understand the principles and technologies for thermal storage system, application and utilization.
2. Identify, formulate and solve simple to complex troubles of thermal storage systems, conversion and storage.
3. Identify and understand principle components and their function.
4. Know the significance of phase change materials
5. Understand the industrial implications of energy storage

MEEMPESCN- RENEWABLE ENERGY SYSTEMS COURSE OUTCOMES

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

1. Acquire, apply and share in depth knowledge in the area of Energy Engineering and Management.
2. Conduct independent research and generate knowledge for the benefit of mankind.
3. Apply engineering and scientific principles for the effective management of energy systems.
4. Gain environmental responsibility.
5. Understand the significance of renewable energy systems.

MEEMPESCN - BIOMASS ENERGY- CONVERSION AND CONSERVATION TECHNIQUES

COURSE OUTCOMES

After successful completion of this course, the students should be able to

1. Understand the generation and utilization of various biomass resources.
2. Gain knowledge on proximate and ultimate analysis.
3. Understand the various biomass conversion - biomethanation, gasification and pyrolysis.
4. Learn the environmental impact of bio mass conversion

5. Know the potential of biomass resources

MEEMPESCN - BIOMASS GASIFICATION -TECHNOLOGY AND UTILIZATION COURSE OUTCOMES

Upon completion of the course, students will be able to

1. Understand biomass gasification technology.
2. Learn different types of gasifier and purification systems.
3. Gain knowledge on different fuel properties
4. Understand the impact of fuels on gasification and engines.
5. Understand the technologies for biomass utilization

MEEMPESCN - ENERGY AUDITING COURSE OUTCOMES

Upon completion of the course, students will be able to

1. Understand various energy management concepts
2. Learn the methods of energy audit and usage of instruments
3. Analyze and report the outcome of energy audit
4. Become a potential energy auditor
5. Promote lifelong learning

MEEMPESCN - WASTE MANAGEMENT AND ENERGY GENERATION TECHNIQUES COURSE OUTCOMES

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

1. Understand the waste characterization, segregation and disposal
2. Familiarize the technologies that are available for effective waste disposal
3. Understand the problem in a sensible and realistic manner
4. Learn the principles of hazardous waste treatment
5. Understand the environmental benefits of biochemical and thermochemical conversions

OPEN ELECTIVES

MEEMOESCN - NUCLEAR ENGINEERING

COURSE OUTCOMES:

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

1. Understand the basic concepts and processes taking place inside a nuclear reactor
2. Understand the techniques of neutron production, scattering, diffusion, slowing down and absorption.
3. Familiar with concepts of reactor criticality, the relationship between the dimension and fissile material concentration in a critical geometry.
4. Familiar with time dependent (transient) behaviour of power reactor in non-steady state operation and the means to control the reactor.
5. Familiar with the concepts of heat removal from reactor core, reactor safety and radiation protection.

MEEMOESCN - FUELS AND COMBUSTION

COURSE OUTCOMES

Upon completion of the course, students will be able to

1. Evaluate the properties of conventional and non conventional fuel, and to describe, compare, cost and availability.
2. Learn the various advantages and disadvantages of each fuel.
3. Understand the complete combustion process of each fuel,

4. Able to calculate the stoichiometry, theoretical and actual air requirement for the combustion process.
5. Understand the concepts of ignition characteristics, Flame, Flame propagation and Flame front in detail.

MEEMOESCN - NUMERICAL ANALYSIS IN ENGINEERING

COURSE OUTCOMES

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

1. Understand the common numerical methods used in engineering analysis
2. Estimate the amount of error inherent in different numerical methods.
3. Solve differential equations
4. Assess the efficiency of a selected numerical method when more than one option is available to solve a certain class of problem.
5. Apply these principles for a lifelong learning

MEEMOESCN - ENERGY MANAGEMENT IN BUILDINGS

COURSE OUTCOMES

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

1. Learn the critical resources required for a modern living
2. Perform energy audit in any type for buildings and suggest the conservation measures.
3. Implement passive cooling techniques in buildings
4. Provide the renewable energy systems for the buildings
5. Enhance their standard of living

MEEMOESCN - ADVANCED POWER PLANT ENGINEERING

COURSE OUTCOMES

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

1. Acquire fundamental knowledge in energy generation, heat transfer and to utilization
2. Gain basic knowledge in renewable energy conversion technology
3. Learn the various cycles employed in power plants
4. Ability to use modern engineering tools, software and equipment to analyze and solve complex engineering problems.
5. Solve real world problems and reduce the impact global warming for betterment of living things to serve healthy life.

AUDIT COURSES

MEEMACSCN - SANSKRIT FOR TECHNICAL KNOWLEDGE

COURSE OUTCOMES

Upon successful completion of the course, the students are able to:

1. Understanding basic Sanskrit language
2. Ancient Sanskrit literature about science & technology can be understood
3. Being a logical language will help to develop logic in students.

MEEMACSCN - VALUE EDUCATION

COURSE OUTCOMES

Upon successful completion of the course, the students are able to:

1. Knowledge of self-development

2. Learn the importance of Human values
3. Developing the overall personality.

MEEMACSCN - CONSTITUTION OF INDIA

COURSE OUTCOMES

Upon successful completion of the course, the students are able to:

1. Discuss the growth of the demand for civil rights in India for the bulk of Indians before the arrival of Gandhi in Indian politics.
2. Discuss the intellectual origins of the framework of argument that informed the conceptualization of social reforms leading to revolution in India.
3. Discuss the circumstances surrounding the foundation of the Congress Socialist Party [CSP] under the leadership of Jawaharlal Nehru and the eventual failure of the proposal of direct elections through adult suffrage in the Indian Constitution.
4. Discuss the passage of the Hindu Code Bill of 1956.

MEEMACSCN - PEDAGOGY STUDIES

COURSE OUTCOMES

Upon successful completion of the course, the students are able to:

1. What pedagogical practices are being used by teachers in formal and informal classrooms in developing countries?
2. What is the evidence on the effectiveness of these pedagogical practices, in what conditions, and with what population of learners?
3. How can teacher education (curriculum and practicum) and the school curriculum and guidance materials best support effective pedagogy?

MEEMACSCN - STRESS MANAGEMENT BY YOGA

COURSE OUTCOMES

Upon successful completion of the course, the students are able to:

1. Develop healthy mind in a healthy body thus improving social health also
2. Improve efficiency

MEEMACSCN- PERSONALITY DEVELOPMENT THROUGH LIFE ENLIGHTENMENT SKILLS

COURSE OUTCOMES

Upon successful completion of the course, the students are able to:

1. Study of Shrimad-Bhagwad-Geeta will help the student in developing his personality and achieve the highest goal in life
2. The person who has studied Geeta will lead the nation and mankind to peace and prosperity
3. Study of Neetishatakam will help in developing versatile personality of students.

M.E. THERMAL POWER ENGINEERING (Two year) Programme

Semester-I

METPPC11: Thermodynamics and combustion

Course outcomes:

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

- CO1. Gain knowledge of energy, basic laws governing energy conversion in multi component systems and application of chemical thermodynamics.
- CO2. Aware of advanced concepts in thermodynamics.
- CO3. Able to present theoretical, semi-theoretical and empirical models for the prediction of thermodynamic properties.
- CO4. Apply fundamental principles of thermodynamics to non-ideal models of numerous

engineering devices

CO5. Understand statistical thermodynamics.

Semester-I **METPPC12: Advanced fluid dynamics**

Course outcomes:

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

CO1. Understand and define the fluid flow problems along with range of governing parameters

CO2. Solve fluid flow problems of industrial base.

CO3. Devise the experiments in the field of fluid mechanics.

CO4. Understand the flow patterns

CO5. Differentiate the flow regimes and its effects.

Semester-I **METPMC15: Research methodology and IPR**

Course outcomes:

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

CO1. Understand research problem formulation.

CO2. Analyze research related information

CO3. Follow research ethics

CO4. Enhance their writing skills

CO5. Understand that today's world is controlled by Computer, Information Technology, but tomorrow world will be ruled by ideas, concept, and creativity.

Semester-I **METPCP16: Thermodynamics and combustion laboratory**

Course outcomes:

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

CO1. Gain knowledge about the combustion principles.

CO2. Analyze the performance of internal combustion engines

CO3. Analyze the performance of steam boiler, turbine and condenser.

CO4. Supplement the principles learnt in kinematics and Dynamics of Machinery.

CO5. Work as a team to promote lifelong learning.

Semester-I **METPCP17: Computer Laboratory.**

Course outcomes:

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

CO1. Able to prepare slides and graphs

CO2. Write and compile programmes in C++

CO3. Develop assembly drawings with different views using auto cad

CO4. Solve simple mathematical models using MATLAB.

CO5. Write simple exercises in CATIA.

Semester-II **METPPC21: ADVANCED HEAT TRANSFER**

Course outcomes:

Upon successful completion of this course the student will be able to

CO1. Apply the law of thermodynamics and heat transfer to real life heat transfer problems.

CO2. Understand the significance of heat transfer in industrial applications

CO3. Learn advanced topics in heat transfer

CO4. Learn the fundamentals of two phase flows

CO5. Develop numerical approach to solve problems in heat transfer.

Semester-II **METPPC22: STEEM ENGINEERING**

Course outcomes:

Upon completion of the course, students will be able to

CO1. Explain the working of different boilers and significance of mountings and accessories.

CO2. Able to use techniques, skills, and modern engineering tools necessary for boiler performance assessment

CO3. Able to design and develop controls and instrumentation for effective monitoring of the process

CO4. Enhance their ability in steam piping design

CO5. Understand the significance of waste minimization and energy conservation.

Semester-II **METPOE26: SOLAR AND HEAT TRANSFER LABORATORY**

Course outcomes:

Upon completing this course, students should be able to:

CO1. Understand the behavior of a system at different operating conditions

CO2. Understand the various modes of heat transfer

CO3. Understand the working of refrigeration systems

CO4. Understand the usage of different refrigeration tools.

CO5. Learn the basics of solar energy, how to determine solar intensity, and how to estimate daily and annual solar energy potential at each location.

Semester-II **METPTS27: INDUSTRIAL TRAINING AND SEMINAR/ MINI PROJECT**

Course outcomes:

CO1. The students can face the challenges in the practice with confidence.

CO2. The student will be benefited by the training with managing the situation arises during the execution of works related to Mechanical Engineering.

Semester-III **METPPV33: PROJECT WORK AND VIVA VOICE PHASE-I**

Course outcomes:

Upon completing this course, students should be able to:

CO1. Understand the significance of research

CO2. Gain hands on experience in collection of literature

CO3. Improve their presentation skills

CO4. Enhance their thesis writing skills

CO5. Apply the knowledge gained from theoretical and practical courses in solving problems, so as to give confidence to be creative, well planned, organized, coordinated in their project work phase – II.

Semester-IV **METPPV41: PROJECT WORK AND VIVA VOICE PHASE-II**

Course outcomes:

Upon completing this course, students should be able to:

CO1. Understand the significance of research

CO2. Gain hands on experience in collection of literature

CO3. Improve their presentation skills

CO4. Enhance their thesis writing skills

CO5. Apply the knowledge in solving problems, so as to give confidence to be creative, well

planned, organized, coordinated project outcome of the aimed work.

PROGRAM ELECTIVES

METPPESCN: NUCLEAR ENGINEERING

Course outcomes:

At the end of the course, students will be able to

- CO1. Understand the basic concepts and processes taking place inside a nuclear reactor.
- CO2. Know the procedure for slowing down and absorption.
- CO3. Familiar with concepts of reactor criticality, the relationship between the dimension and fissile material concentration in a critical geometry.
- CO4. Familiar with transient behaviour of power reactor in non-steady state operation and the means to control the reactor.
- CO5. Familiar with concepts of heat removal from reactor core, reactor safety and radiation protection.

METPPESCN: ENERGY CONSERVATION AND MANAGEMENT

Course outcomes:

Upon completion of this course, the students will be able to

- CO1. Perform energy auditing for the energy consumption in industries.
- CO2. Know the different types of lightings
- CO3. Understand the energy conservation measures
- CO4. Understand the significance of energy conservation in major utilities
- CO5. Learn the concept of energy economics

METPPESCN: AIR CONDITIONING SYSTEM DESIGN

COURSE OUTCOMES:

At the end of the course, students should be able to

- CO1. Understand the construction and design features of Air-conditioning system.
- CO2. Know the various air conditioning processes
- CO3. Understand various types and its adoptability to various environment.
- CO4. Understand the various health issues
- CO5. Able to design seasonal energy efficient system

METPPESCN - GAS TURBINES

COURSE OUTCOMES:

At the end of the course, students will be able to

- CO1. Understand the construction and design features of gas turbines
- CO2. Understand the thermodynamic cycles
- CO3. Understand the different layouts of a gas turbine plant
- CO4. Able to understand thermodynamics and fluid mechanics component for enhancing the efficiency and effectively of gas turbines
- CO5. Learn the operation of jet propulsion

METPPESCN- REFRIGERATION AND CRYOGENICS

COURSE OUTCOMES:

At the end of the course, students will demonstrate the ability to:

- CO1. Learn the basics of refrigeration and cryogenics and its application area.
- CO2. Design the refrigeration systems for domestic and industrial applications like cold

storages

CO3. Learn the various refrigerants and their properties

CO4. Design heat exchangers

CO5. Learn about ODP, GWP and related environment issues.

METPPESCN - DESIGN OF HEAT EXCHANGERS

COURSE OUTCOMES:

At the end of the course, students will be able to

CO1. Understand the need for the design of heat exchangers

CO2. Demonstrate a basic understanding of several types of heat exchangers

CO3. Explain the working of heat pipes

CO4. Design and analyses of shell-and-tube double pipe, compact, plate heat exchangers.

CO5. Demonstrate the performance degradation of heat exchangers subjected to fouling.

METPPESCN- COMPUTATIONAL FLUID DYNAMICS

COURSE OUTCOMES:

At the end of the course students will be able to

CO1. Understand the concepts of Computational Fluid Dynamics

CO2. Know how to use CFD it as tool to solve the Heat Transfer and Fluid Mechanics related Industrial Problems.

CO3. Generate various types of meshes

CO4. Understand the methodology of CFDHT

CO5. Promote interest to carry out the Future Research.

METPPESCN - MODELLING OF IC ENGINES

COURSE OUTCOMES:

At the end of the course, students will be able to

CO1. Demonstrate a basic understanding of several types of engine models

CO2. Generate different types of IC engine models

CO3. Simulate the spray behavior of engine.

CO4. Demonstrate the performance evaluation and emission standards for the modeled engines

CO5. Estimate friction for warm and warm up engines

METPPESCN - SOLAR ENERGY AND WIND ENERGY

COURSE OUTCOMES

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

CO1. Know about the exploration of nonconventional energy resources and their effective tapping technologies.

CO2. Model solar thermal system

CO3. Determine the characteristics of solar thermal system

CO4. Understand wind turbine aerodynamics

CO5. Demonstrate the working of wind energy conversion system.

METPPESCN - ADVANCED MATHEMATICAL METHODS IN ENGINEERING

COURSE OUTCOMES:

At the end of the course, students will demonstrate the ability to:

CO1. Analyze and develop mathematical model for the thermal system.

CO2. Analyze the reliability and maintainability of the series and parallel thermal system.

- CO3. Solve differential equations using numerical techniques.
- CO4. Perform experimental design
- CO5. Motivate himself for a lifelong learning

OPEN ELECTIVES

METPOESCN - INDUSTRIAL SAFETY

COURSE OUTCOMES

Upon completion of the course, students will be able to

- CO1. Know the significance of industrial safety
- CO2. Learn the fundamentals of maintenance
- CO3. Able to trace the fault in machines
- CO4. Learn about wear and corrosion
- CO5. Understand the significance of periodic maintenance

METPOESCN - WASTE TO ENERGY

COURSE OUTCOMES

Upon completion of the course, students will be able to

- CO1. Understand the energy potential from waste
- CO2. Learn the various resources from waste
- CO3. Implement bio mass processing techniques
- CO4. Learn the properties of biogas
- CO5. Attempt energy generation from waste

METPOESCN - NUCLEAR ENGINEERING

COURSE OUTCOMES:

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

- CO1. Understand the basic concepts and processes taking place inside a nuclear reactor
- CO2. Know the concepts of nuclear fission, neutron production, scattering, diffusion, slowing down and absorption.
- CO3. Familiar with concepts of reactor criticality, the relationship between the dimension and fissile material concentration in a critical geometry.
- CO4. Familiar with time dependent (transient) behaviour of power reactor in non-steady state operation and the means to control the reactor.
- CO5. Familiar with concepts of heat removal from reactor core, reactor safety and radiation protection.

METPOESCN - FUELS AND COMBUSTION

COURSE OUTCOMES

Upon completion of the course, students will be able to

- CO1. Evaluate the properties of conventional and non conventional fuel, and to describe, compare, cost and availability.
- CO2. Learn the various advantages and disadvantages of each fuel.
- CO3. Understand the complete combustion process of each fuel,
- CO4. Able to calculate the stoichiometry, theoretical and actual air requirement for the combustion process.
- CO5. Understand the concepts of ignition characteristics, Flame, Flame propagation and Flame front in detail.

METPOESCN - ENERGY MANAGEMENT IN BUILDINGS

COURSE OUTCOMES

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

- CO1. Learn the critical resources required for a modern living
- CO2. Perform energy audit in any type for buildings and suggest the conservation measures.
- CO3. Implement passive cooling techniques in buildings
- CO4. Provide the renewable energy systems for the buildings
- CO5. Enhance their standard of living

METPOESCN- BIO ENERGY CONVERSION

COURSE OUTCOMES

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

- CO1. Gain vast idea of the various form of biomass availability in the earth.
- CO2. Get complete understanding of the various biomass energy conversion technologies,
- CO3. Understand the importance of bio mass
- CO4. Learn the chemistry behind the combustion process.
- CO5. Learn the economical and environmental aspects of biomass energy conversion

METPOESCN - ADVANCED POWER PLANT ENGINEERING

COURSE OUTCOMES

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

- CO1. Acquire fundamental knowledge in energy generation, heat transfer and to utilization
- CO2. Gain basic knowledge in renewable energy conversion technology
- CO3. Learn the various cycles employed in power plants
- CO4. Ability to use modern engineering tools, software and equipment to analyze and solve complex engineering problems.
- CO5. Solve real world problems and reduce the impact global warming for betterment of living things to serve healthy life.

AUDIT COURSES

METPACSCN- SANSKRIT FOR TECHNICAL KNOWLEDGE

COURSE OUTCOMES

Upon successful completion of the course, the students are able to:

- CO1. Understanding basic Sanskrit language
- CO2. Ancient Sanskrit literature about science & technology can be understood
- CO3. Being a logical language will help to develop logic in students.

METPACSCN - VALUE EDUCATION

COURSE OUTCOMES

Upon successful completion of the course, the students are able to:

- CO1. Knowledge of self-development
- CO2. Learn the importance of Human values
- CO3. Developing the overall personality.

METPACSCN - CONSTITUTION OF INDIA

COURSE OUTCOMES

Upon successful completion of the course, the students are able to:

CO1. Discuss the growth of the demand for civil rights in India for the bulk of Indians before the arrival of Gandhi in Indian politics.

CO2. Discuss the intellectual origins of the framework of argument that informed the conceptualization of social reforms leading to revolution in India

CO3. Discuss the circumstances surrounding the foundation of the Congress Socialist Party [CSP] under the leadership of Jawaharlal Nehru and the eventual failure of the proposal of direct elections through adult suffrage in the Indian Constitution.

CO4. Discuss the passage of the Hindu Code Bill of CO19CO5CO6.

METPACSCN - PEDAGOGY STUDIES

COURSE OUTCOMES

Upon successful completion of the course, the students are able to:

CO1. What pedagogical practices are being used by teachers in formal and informal classrooms in developing countries?

CO2. What is the evidence on the effectiveness of these pedagogical practices, in what conditions, and with what population of learners?

CO3. How can teacher education (curriculum and practicum) and the school curriculum and guidance materials best support effective pedagogy?

METPACSCN - STRESS MANAGEMENT BY YOGA

COURSE OUTCOMES

Upon successful completion of the course, the students are able to:

CO1. Develop healthy mind in a healthy body thus improving social health also

CO2. Improve efficiency

METPACSCN - PERSONALITY DEVELOPMENT THROUGH LIFE ENLIGHTENMENT SKILLS

COURSE OUTCOMES

Upon successful completion of the course, the students are able to:

CO1. Study of Shrimad-Bhagwad-Geeta will help the student in developing his personality and achieve the highest goal in life

CO2. The person who has studied Geeta will lead the nation and mankind to peace and prosperity

CO3. Study of Neetishatakam will help in developing versatile personality of students.