DEPARTMENT OF MECHANICAL ENGINEERING

3rd semester

**TH1 -Production Technology**

COURSE OUTCOMES

° CO 1-Understand the different components and processes involved in press tool operation.

° CO 2-Understand how to minimize the job setting and tool setting times in mass production.

° CO 3-Understand the industrial requirements of fabrication systems.

° CO 4- Understand the manufacturing processes like casting and powder metallurgy.

° CO 5- Explain the conventional and advanced metal forming processes

**PRE REQUISITE:-**

Production Technology involves a working knowledge in the field of product design, product development and rapid part production. It deals with the production methodology and its management to make a complete analysis on the products.

1. Knowledge about Materials, and Planning focuses on manufacturing processes used with metals and polymers,
2. Knowledge about materials used in engineering, and production planning and cost accounting.

**TH2-Strength of materials**

COURSE OUTCOMES

* CO 1-Evaluation of stress, strain under uniaxial loading (due to static or impact load and temperature) in simple and single core composite bars.
* CO 2-Determination of stress, strain and change in geometrical parameters of cylindrical and spherical shells due to pressure.
* CO 3- Recognization of shear stress besides normal stress and computation of resultant stress in two dimensional objects.
* CO 4- Draw bending moment and shear force diagram and locating points in a beam where the effect is maximum or minimum.
* CO 5- Determine of bending stress and torsional shear stress in simple cases & Understanding of critical load in slender columns thus realizing combined effect of axial and bending load.

**PRE REQUISITE:-**

Strength of material deals with the internal behaviors of solid bodies under the action of external force. The subject focuses on mechanical properties of material analysis of stress, strain and deformations. Therefore it is an important basic subject of students for Mechanical and Automobile Engg.

1. Knowledge about Mechanics of materials: that covers the basics of materials elastic behavior, stress, strain, how to calculate them.
2. Knowledge about Fatigue of materials: where you understand that when the loads vary with time.
3. Knowledge about Materials Science: you learn the various types of materials, their behavior and strength in regard to the previous topics, and how to select an suitable material to the desired function.

**TH-3 ENGINEERING MATERIALS**

COURSE OUTCOMES

° CO 1- Recognise material requirements .

° CO 2- Identify application area of ferrous, non ferrous and alloys .

° CO 3- Analyze micro-structural changes during iron-carbon phase transformation process.

° CO 4- Understand effect of heat treatment and its effect towards change in material properties.

° CO 5- Recollect continuity during evolution in engineering materials and formulate modern engineering materials .

**PRE REQUISITE:-**

Entire field of engineering deals with use of host of materials for making objects for human need. These materials include wide spectrum of element, metals, alloys and compounds with diverse properties. It is imperative that an engineer from any field should have a good knowledge of such materials and their properties.

1. Knowledge about One must need a strong foundation in mathematics and physics. This includes classes such as Calculus, Linear Algebra, Differential Equations, and Classical Mechanics.
2. Knowledge about In addition, you will also need to have a solid understanding of chemistry, specifically inorganic chemistry.
3. Knowledge about It also includes classes in thermodynamics, solid state physics, and materials science.

**TH-4 Thermal Engineering**

COURSE OUTCOMES

° CO 1- Defining the significance of thermodynamics properties in order to analyze a Thermodynamic system.

° CO 2-Explaining & applying first & second law of thermodynamics in closed & open system.

° CO 3-Describing & applying gas laws applicable to perfect gas in order to determine. Thermodynamic properties.

° CO 4-Explain and classify the IC engine. Describe the engine terminology. Distinguish the function of 2-srroke & 4 -stroke engines. Differentiate CI & SI engine.

° CO 5-Describe different type of gas power cycle like Carnot cycle, Otto cycle, Diesel Cycle, Dual Cycle. Solving simple problems.

**PRE REQUISITE:-**

Thermal Engineering is the field of applied science which deals with energy possessed by heated gases and the laws which give the conversion of this energy into mechanical energy and vice versa.

1. Knowledge about An introductory background in chemistry, physics, and calculus. Defining systems, surroundings, boundaries, and states.
2. Knowledge about Types of systems, including open, closed, and isolated.
3. Knowledge about temperature, pressure, volume, internal energy, entropy.
4. Knowledge about basics of thermodynamics because it includes terms such as specific heat , density ,temperature in transient conduction analysis.

**TH5-ENVIRONMENTAL STUDIES**

COURSE OUTCOMES

CO 1: Compute the force, moment & their application through solving of simple problems on

coplanar forces.

CO 2: Understand the concept of equilibrium of rigid bodies.

CO 3: Know the existence of friction & its applications through solution of problems on above.

CO 4: Locate the C.G. & find M.I. of different geometrical figures.

CO 5: Know the application of simple lifting machines.

CO 6: Understand the principles of dynamics.

**PRE REQUISITE:-**

Due to various aspects of human developments including the demand of different kinds of technological innovations, most people have been forgetting that, the Environment in which they are living is to be maintained under various living standards for the preservation of better health. the subject of Environmental Studies to be learnt by every student in order to take care of the environmental aspect in each and every activity in the best possible manner.

1. Knowledge about in physics, biology, chemistry, mathematics, statistics, economics, and geography.
2. Knowledge about conservation of nature and natural resources.
3. Knowledge about Conservation of biological diversity.
4. Knowledge about Control of environmental pollution.
5. Knowledge about Stabilization of human population and environment.

**PR1-Mechanical Engg. Drawing**

**Course outcomes of Mechanical Engg. Drawing**

* CO 1 – Recognizing significance of standardized representations
* CO 2 - Comprehending role of various fastening elements and offer engineering drawing thereof in manual mode
* CO 3 – Comprehending geometrical constraints and function of components in assemblies such as bearings and screw jack
* CO 4 – Comprehending functional requirement of major components and offer engineering drawing in manual mode thereof

**Pre-requisites for Mechanical Engg. Drawing**

1.Knowledge of basic math concepts and terms helps a lot. I'm thinking shapes (circles, rectangles, ellipses, polygons), angles (degrees, radians), different types of symmetry (reflectional, rotational, translational), scaling, unit measurement systems,

2. Knowledge about all engineering drawing (drafting) is done on computers in computer-assisted design (CAD) software, so knowing your way around a computer can help immensely. Mouse and keyboard use, navigating menus and dialogs, managing files and directories, etc. is valuable.

3. Knowledge about The things which is also important is a keen eye for detail, good spatial awareness, the ability to visualize objects in three dimensions before they are on a page.

**PR2-Mechanical Engg. Lab-I**

**Course outcomes of Mechanical Engg. Lab-I**

° CO 1-.Detemine end reactions using parallel force apparatus & young’s modulus using searl’s apparatus.

° CO 2-Determine the properties and salient points of different testing machines like Torsion testing machine, UTM, Hardness testing machine & Impact testing machine.

° CO 3-.Determine the characteristics of the equipments using fuels & perform joule’s experiments

**Pre-requisites for Mechanical Engg. Lab-I**

**1.**Knowledge about types of beams

2. Knowledge about calculation os stress,strain,young’s modulus of materials

3.Knowledge about stress-strain curve

4. Knowledge about calculation of shear force and bending moment

5.Knowledge about torsion

5.Knowledge about hardness of materials

6. Knowledge about flash point & fire point.

**PR3- WORKSHOP PRACTICE-II**

**Course outcomes of WORKSHOP PRACTICE-II**

* CO 1 -Demonstrate the different types of carpentry tools and their application
* CO 2 - Demonstrate the S.C lathes and their different types of operation

**Pre-requisites for WORKSHOP PRACTICE-II**

1. Knowledge about safety practices in the fitting shop.
2. Knowledge about holding & clamping devices.
3. Knowledge about tools like- files, vice, chisels, punch, scriber, hammers, surface plate, V-block, try square, caliper etc.
4. Knowledge about Sawing, Chipping, Fitting, Craping, Grinding, Marking, Reaming, Tapping, Drilling & Angular cutting.
5. Knowledge about simple operation of hack saw straight and angular cutting.
6. Knowledge about measuring tools used in fitting shop like steel rule, measuring tape, outside micrometer, vernier caliper and vernier height gauge.
7. Knowledge about materials mechanical properties.
8. Knowledge about iron carbon diagram.
9. Knowledge about heat.
10. Know about Different types of timbers.
11. Knowledge about Trigonometry ,drawing & measuring.
12. Knowledge about Safety precautions in welding, safety equipments.
13. Knowledge about type of arc welding (AC & DC) to polarity & their use.
14. Knowledge about Hand shield, helmet, clipping hammer, gloves, welding lead, connectors, aprons, goggles, etc.
15. Knowledge about welding defects & various types of joints & end preparation.
16. Knowledge about different types of joint.
17. Knowledge about gas welding & equipments.
18. Knowledge about types of flame, adjustment of flame, applications of gas welding, Welding tools & safety precautions.

**4th semester**

**TH1-THEORY OF MACHINES**

COURSE OUTCOMES

° CO 1-Expressing machine system consisting of different link assemblies as components,

Explaining working principle of machine components such as clutch, brakes, and bearings based on friction.

° CO 2-Defining and summarizing working principles related to power transmission systems and predicting the work involved and efficiency.

° CO 3-Classify working principle in speed and torque regulating devices such as governor and flywheels.

° CO 4-Estimating the amount and position of masses required towards static and dynamic balancing .

° CO 5- Defining types and causes of vibration in machines and predicting remedial measures.

**PRE REQUISITE:-**

Mechanical and Automobile engineering is involved with design, manufacturing and use of various types of machines. Each machine consists of a large number of static and moving parts called mechanisms. Theory of machines is study of such different kind of mechanisms.

1. Knowledge about all the mechanisms and the study of links associated with the force acting upon it.

2. Knowledge about all the mechanisms and the study of links associated with the force acting upon it. all the mechanisms and the study of links associated with the force acting upon it.

3. Knowledge about Newton's Laws and Motion and Motion of Rigid Bodies.

4. Knowledge about Basic Concepts of Kinetics and Kinematics

5. Knowledge about Units and Measurements

6. Knowledge about Work Energy and Power

7. Knowledge about Rotational Motion

8. Knowledge about Properties of Solids, Liquids and Matter

9. Knowledge about Heat Energy

10. Knowledge about Kinetic Theory of Gases

**TH2-MANUFACTURING TECHNOLOGY**

COURSE OUTCOMES

° CO 1-Analyze material properties for cutting tools.

° CO 2-Understand machining mechanism principle.

° CO 3-Create different engineering structure.

° CO 4-Understand different types of engineering machine (lathe, shaper, milling machine etc)

° CO 5-lmplement knowledge in different engineering Industry.

**PRE REQUISITE:-**

Engineering basically means production of goods and services for human consumption. The major function of mechanical engineering is to manufacture various products using machineries, production processes and production management techniques

1. Knowledge about conversion of raw material into changed finished goods.
2. Knowledge about The application of tools and processes.

**TH3-FLUID MECHANICS**

COURSE OUTCOMES

CO1.Define fluid understand the properties of fluid and fluid pressure Evaluate fluid pressure.

CO2.Understand total pressure &amp; center of pressure Evaluate the total pressure &amp center of pressure.HeaderClose Header and Footer Close.

CO3.Classify the types of fluid flow Explain equation of continuity and bernoulli's theorem &amp; evaluate the discharge of fluid.

CO4.Understand flow through orifice.Classify notches &amp; weirs Evaluate discharge through notch &amp; weirs.

CO5.understand &amp; evaluate the concept of losses in pines Analyze the impact of jets &amp; evaluate the work done &amp; efficiency.

**PRE REQUISITE:-**

Use of fluid in engineering field is of great importance. It is therefore necessary to study the physical properties and characteristics of fluids which have very important application in mechanical and automobile engineering.

1. Knowledge about a strong background in Calculus and Physics.
2. Knowledge about IT may also require courses in Differential Equations, Linear Algebra and Mechanics.
3. Knowledge about Vector calculus, ordinary and partial differential equations, some exposure to complex variables.

**TH4-THERMAL ENGINEERING-II**

COURSE OUTCOMES

C01 Determining the power developed in IC engine and efficiency.

CO2 Understanding the principle, performance and application of air compressors.

CO3 Identify thermodynamic properties of steam using steam tables & molliers chart.

CO4 Comprehending the working of various steam generators i.e. boilers.

CO5 Recognize the vapor power cycles

**PRE REQUISITE:-**

Modern society needs lots of applications of thermodynamics, which deals with energy possessed by hot vapors, its production and its application in different fields.

1. Knowledge about Transfer of heat, its measurement, and the management of heat-related systems and processes.This includes understanding how heat is generated and transferred, as well as how to control it.
2. Knowledge about Knowledge for designing and developing systems and equipment that use heat, such as heating and cooling systems, engines, and power plants.
3. Knowledge about on developing new materials and technologies that can improve energy efficiency and reduce environmental impact.

**PR1-THEORY OF MACHINES AND MEASUREMENTS LAB**

COURSE OUTCOMES

On completion of the course, students will be able to –

° CO 1- Determine the centrifugal force of a governor.

° CO 2- Gather knowledge about Static balancing, Journal bearing, Epicyclic gear train, Cam & followers

° CO 3- Gather knowledge about different types of measuring instruments like Vernier Caliper, Vernier Height Gauge, Micrometer, Sine bar & Slip gauges.

**PRE REQUISITE:-**

1.Knowledge about different types of measuring instruments like vernier height gauge,vernier caliper,micrometer& slip gauge

2. Knowledge about governor

3. Knowledge about static balancing apparatus.

4. Knowledge about journal bearing apparatus

5. Knowledge about Cam and followers.

6. Knowledge about epicyclic gear train.

**PR-2 MECHANICAL ENGG. LAB –II**

COURSE OUTCOMES

On completion of the course, students will be able to –

° CO 1- Gather knowledge about Petrol & Diesel Engines.

° CO 2- Determine thermal efficiency of Single Cylinder Petrol & Diesel Engines,Air compressor & Perform Morse Test.

° CO 3- Gather knowledge about different pressure measuring devices & Verify Bernoulli’s theorem,

° CO 4- Determine Cc, Cv, Cd of Venturimeter & Orificemeter.

° CO 5- Determine Darcy’s Coefficient for flow through pipe.

**PRE REQUISITE:-**

1. Knowledge about 2-stroke & 4-stroke petrol and diesel engines
2. Knowledge about calculation of brake thermal efficiency of single cylinder and double cylinder petrol and diesel engine.
3. Knowledge about Air compressor
4. Knowledge about Bernoulli’s Theorem
5. Knowledge about Venturimeter
6. Knowledge about Orifice meter
7. Knowledge about losses in Pipes.

**PR3-WORKSHOP PRACTICE-III**

COURSE OUTCOMES

On completion of the course, students will be able to –

* CO 1 –Prepare calliper, Try-square & Hammer.
* CO 2 – Prepare door ring with hook, hexagonal head bolt & octagonal flat chisel.
* CO3­ – Prepare different types of carpentry joints.
* CO4 – Prepare lap & butt joints by using gas and arc welding of ferrous & non-ferrous metal.

**PRE REQUISITE:-**

1. Knowledge about Safety precaution & safety equipments.
2. Knowledge about Various marking, measuring, cutting & holding tools.
3. Knowledge about different parts of a lathe, demonstration on centering & turning operation like plain turning, taper turning & grooving.
4. Knowledge about drilling & drilling tools.
5. Knowledge about thread , thread tools & types of thread .
6. Knowledge about capstan & turret lathe.
7. Knowledge about CNC & CNC tools.
8. Knowledge about Shaper & safety precaution.
9. Knowledge about Shaper tools & operation.
10. Knowledge about CI & MS material.
11. Knowledge about milling machine & operations.
12. Knoledge about gear.

**5th semester**

**TH1-ENTREPRENEURSHIP and MANAGEMENT & SMART TECHNOLOGY**

COURSE OUTCOMES

° CO 1-Understand about entrepreneurship, types of industries and startups.

° CO 2-Execute market survey.

° CO 3-Develop project report .

° CO 4- Apply modern concepts like TQM.

° CO 5- Understand the management principles and functional area of management.

**PRE REQUISITE:-**

In the present day scenario, it has become imperative to impart entrepreneurship and management concepts to students, so that a significant percentage of them can be directed towards setting up and managing their own small enterprises. It may be further added that an entrepreneurial mind set with managerial skill helps the student in the job market. The students can also be introduced with Startup and Smart Technology concept, which shall radically change the working environment in the coming days in the face of Industry 4.0

1. Knowledge about It include critical thinking, creativity, risk-taking, problem-solving, networking, leadership, and communication skills.
2. Knowledge about You need to have a passion for what you do, a basic understanding of business concepts, networking skills, risk-taking ability, adaptability, and some knowledge of technology and programming.
3. Knowledge about Learn how to communicate, how to manage a team and how to think like an entrepreneur.

**TH2-DESIGN OF MACHINE ELEMENTS**

COURSE OUTCOMES

° CO 1-Understand the behaviours of material and their uses.

° CO 2-Analyze the design of various fastening elements and their industrial uses. Understand the concept of the different failures of design elements.

° CO 3-Design shafts & keys required for power transmission.

° CO 4- Design couplings. Classify its types

° CO 5Design closed coil helical spring.-lmplement knowledge in different engineering Industry.

**PRE REQUISITE:-**

Machine design is the art of planning or devising new or improved machines to accomplish specific purposes. Idea of design is helpful in visualizing, specifying and selection of parts and components which constitute a machine. Hence all mechanical engineers should be conversant with the subject.

1. Mechanical behavior includes statics, dynamics, strength of materials, vibrations, reliability, and fatigue.
2. Machine elements are basic mechanical parts of machines.
3. Understanding of design, selection and evaluation of mechanisms.
4. Understanding of stress analysis related to mechanical design

**TH3-HYDRAULIC MACHINES &INDUSTRIAL FLUID POWER**

COURSE OUTCOMES

**° CO 1-** Conduct performance test on impulse and reaction turbine.

**° CO 2**- Conduct performance test on centrifugal pump.

**° CO 3**- Design & operate pneumatic circuits.

**° CO 4**- Design & operate industrial fluid power circuits.

**PRE REQUISITE:-**

Use of fluids can be realized by a group of machines called hydraulic machine and use of hydraulic control and pneumatic control system in automation and in earth movers.

1. Knowledge about the fundamentals of engineering mechanics, resolving of forces, Statics, Dynamics and flow kinematics.
2. Knowledge about Students are expected to know the fundamentals of engineering mechanics, resolving of forces, Statics, Dynamics and flow kinematics.
3. Knowledge about Students are also expected to have expertise on several fluid handling equipment’s such as different pumps, turbines, hydroelectric power plant.

**TH4-MECHATRONICS**

COURSE OUTCOMES

CO-1- Understands the concept of mechatronics system & Apply the principle of mechatronics for the development of productive systems.

CO-2-Understand the CNC technology and applications of mechatronics in manufacturing automation.

CO-3-Clysify different type of system and Sensors and solve the simple problems & Evaluate the concept of Mechanical actuation, Electrical actuation and solve the simple problems.

CO-4-Classify various types of System Models & Input /Output parts and solve the problems.

CO-5-Identify the programmable Logic Controller and develop programme in PLC & understand the Industrial robotics.

**PRE REQUISITE:-**

Day by day, engineering and technology experiences a tremendous growth. Mechatronics plays a major role in developing engineering and technology. It can be defined as the applications of electronics and computer technology to control the motions of mechanical systems

1. Students must have Knowledge in mathematics (geometry, trigonometry, and calculus), physics, computer science (especially computer-aided design), and mechanical drawing and shop.
2. Knowledge of programming is very important. A mechatronics engineer has to do programming in different levels
3. Knowledge about in mathematics and physics, as well as a basic understanding of electrical engineering and computer science.

**TH5-REFRIGERATION AND AIR CONDITIONING**

**COURSE OUTCOMES**

ON COMPLETION OF THE COURSE, STUDENTS WILL BE ABLE TO -

° CO 1-Understand the working of open & closed air refrigeration systems.

° CO 2- Discuss about vapor compression refrigeration and vapor absorption refrigeration system

° CO 3-. Explain the working and construction of compression condense and evaporation for a refrigeration system.

° CO 4- Identify the different properties of refrigerant properties.

° CO 5- Recognize the different types of equipment for air conditioning.

**PRE REQUISITE:-**

the study of Refrigeration and Air-conditioning is essential. Comfort is the basic requirement of customers and machines through air conditioning & hence learning the concept of air-conditioning and methods of air-conditioning facilities quality design of air conditioning

1. It is important that one has a basic understanding of applied physics. Particularly the fundamental law of thermodynamics, air flow and basic electronics and electrical. Both electronics an electrical applications involve electricity but they are different in the applications. One is high voltage and the other is typically low voltage.
2. Knowledge about the fundamentals of expansion and compression of gasses.

**PR1-REFRIGERATION AND AIR CONDITIONING LAB**

**COURSE OUTCOMES**

On completion of the course, students will be able to –

° CO 1- Understand the constructional features of Domestic Refrigeration & water cooler.

° CO 2- Recognize the different types of AC Systems.

° CO 3- Determine the COP & Capacity of vapour compression refrigeration system VCRS), water cooler, vapour absorption refrigeration system (VARS).

° CO 4- Determine the capacity & COP of different types of AC System.

° CO 5- Complete charging of Domestic Refrigerator and its leak test.

**PRE REQUISITE:-**

1.Knowledge about Domestic Refrigerator.

2. Knowledge about water cooler.

3. Knowledge about window air conditioner

4. Knowledge about split air conditioner

5. Knowledge about COP calculation of vapour compression Refrigerator test rig

6. Knowledge about capacity and cop of water cooler

7. Knowledge about capacity and cop of window air conditioner

8. Knowledge about capacity and cop of split air conditioner

9. Knowledge about capacity and cop of vapour absorption Refrigerator test rig.

**PR2-HYDRAULIC MACHINES &INDUSTRIAL FLUID POWER LAB**

**COURSE OUTCOMES**

On completion of the course, students will be able to –

° CO 1- Conduct performance test on impulse and reaction turbine

° CO 2- Conduct performance test on centrifugal pump

° CO 3- Design & operate pneumatic circuits

° CO 4- Design & operate industrial fluid power circuits

**PRE REQUISITE:-**

1.Knowledge about Impulse and reaction turbines

2. Knowledge about Centrifugal pumps

3. Knowledge about Pneumatic circuits

4. Knowledge about Industrial fluid power circuits

**PR3-CAD/CAM LAB**

**COURSE OUTCOMES**

On completion of the course, students will be able to –

° CO 1- Understand the fundamentals and use of CAD.

° CO 2- Conceptualize drafting and modeling in CAD.

° CO 3- Interpret the various features in the menu of solid modelling package.

° CO 4- Synthesize various parts or components in an assembly.

° CO 5- Prepare CNC programmes for various jobs

**PRE REQUISITE:-**

1. Fundamental Knowledge and use of Cad Software.
2. Fundamental Knowledge about of Modelling.
3. Fundamental knowledge about CNC Lathe & CNC Milling.
4. Fundamental knowledge about Assembling.

**6th SEMESTER**

**TH1-INDUSTRIAL ENGINEERING & MANAGEMENT**

**COURSE OUTCOMES**

° CO 1-Identify the place for a new plant set up and systematic arrangements of machinery and shop for smooth production.

° CO 2-Understand stock management.

° CO 3-Evaluate the charts to record the quality of products.

° CO 4- Formulate goods and services for benefit of mankind.

° CO 5-lmplement knowledge in different engineering Industry.

**PRE REQUISITE:-**

Main objective of Mechanical Engineering is to produce goods and services for benefit to mankind. Such productions are done utilizing various resources like Men, Materials, machines and Money. Industrial engineering and quality control is the subject which allows optimized use of such resources and hence very important for a mechanical engineer.

1. Students should have good understanding of manufacturing processes, supply chain management, and logistics.
2. They should be familiar with various production systems, tools, and techniques such as Lean Manufacturing, Six Sigma, and Total Quality Management.
3. knowledge about principles of calculus, trigonometry, and other advanced topics in mathematics for analysis, design, and troubleshooting in their work.

**TH2-AUTOMOBILE ENGINEERING AND HYBRID VEHICLES**

**COURSE OUTCOMES**

ON COMPLETION OF THE COURSE, STUDENTS WILL BE ABLE TO -

° CO 1- Classify automobiles Describe the transmission system & sketch its components

° CO 2- Classify brakes explain its types & sketch its components

° CO 3- Describe the ignition system Distinguh them & discuss various types of suspension system

° CO 4- .Discuss cooling & lubrication system & classly its types & identify the defects & remedies in the system

° CO 5- .Understand the concept of hybrid vehiclocal leroypes à identify the area of applications

**PRE REQUISITE:-**

Automobiles are the principal mode of transport system. Their manufacture and maintenance gives a major scope for employment. Many entrepreneur pass outs go for servicing of automobiles or trading/ manufacturing of auto components. Thus automobile engineering is an important subject to be in the regular curriculum of the mechanical engineering.

1. one should have basic understanding of subjects such as Mathematics, Chemistry and Physics.
2. knowledge of engineering science and technology.
3. design skills and knowledge.
4. knowledge of physics.
5. to be thorough and pay attention to detail.
6. analytical thinking skills.
7. the ability to use, repair and maintain machines and tools.
8. thinking and reasoning skills.

**TH3-POWER STATION ENGINEERING**

**COURSE OUTCOMES**

ON COMPLETION OF THE COURSE, STUDENTS WILL BE ABLE TO -

C01 Recollect the generation of power by utilizing various energy sources.

CO2 Identifies the use of steam, its operation in thermal power stations.

CO3 Understand the nuclear energy sources and power developed in nuclear power stations.

CO4 Recognize the basics of diesel electric power station and hydroelectric power station.

CO5 Locate the basics of gas turbine power station

**PRE REQUISITE:-**

Bulk powers used in industries and for domestic purposes are generated in power stations. A large number of diverse and specialized equipment and system are used in a power plant should have this important subject in mechanical engineering.

1.It is recommended to have a strong foundation in mechanical, electrical, and/or chemical engineering. Some essential courses that you should consider taking include thermodynamics, fluid mechanics, heat transfer, electrical circuits, power systems, and control systems

.

2.Additionally, courses in renewable energy, environmental regulations, and project management may also be helpful. It is also important to gain hands-on experience through internships or co-op programs to apply the theoretical knowledge learned in the classroom to real-world situations.

**TH4-ADVANCE MANUFACTURING PROCESSES**

**COURSE OUTCOMES**

ON COMPLETION OF THE COURSE, STUDENTS WILL BE ABLE TO -

° CO 1- Identify various modern machining processes and understand their working principle.

° CO 2- Analyze Plastic Processing .

° CO 3- Creat ideas on additive manufacturing process.

° CO 4- Understand the Special Purpose Machines.

° CO 5- Recognise the Maintenance of Machine Tools

**PRE REQUISITE:-**

Advance manufacturing processes is the field of production by advance nontraditional methods which give the conversion of raw materials into finished product..

1.Knowledge about  innovative technologies that heavily lean on information, automation, computation, software, sensing and networking.

 2.Knowledge to convert raw materials into large quantities of products that are ready to sell.

3.Knowledge about Manufacturing processes that can range from surprisingly simple to exceedingly complex, depending on the product and organization.

**PR1- AUTOMOBILE ENGINEERING LAB**

**COURSE OUTCOMES**

On completion of the course, students will be able to –

° CO 1- Gather knowledge about Automobile Chasssis & Mechanism of tractor.

° CO 2- Gather knowledge about Braking System of Automobile,Carburetor & Fuel Pump.

° CO 3- Gather knowledge about Actual Gear Box & Car Engine.

**PRE REQUISITE:-**

1.Knowledge abiout Automobile chassis.

2. Knowledge abiout differential mechanism of the Tractor..

3. Knowledge abiout hydraulic braking system of automobile

4. Knowledge abiout hydraulic braking system of automobile

5. Knowledge abiout fuel pump cut section model.

6. Knowledge abiout ctual cut section of gear box.

7. Knowledge abiout actual car engine.

**PR2-POWER STATION ENGINEERING LAB**

**COURSE OUTCOMES**

On completion of the course, students will be able to –

° CO 1- Gather knowledge about Modern Steam Power Plant ,Cooling Tower & Jet Condenser.

° CO 2- Determine various efficiencies of Steam Turbines.

° CO 3- Gather knowledge about De-Lavel Turbine & Spring Loaded Safety Valve.

° CO 4- Gather knowledge about different types of Steam Generators (Boilers).

**PRE REQUISITE:-**

1.Knowledge about modern steam power plant

2.Knowledge about the various efficiencies of steam turbine.

3.Knowledge about the cooling tower

4.Knowledge abiout jet condenser

5.Knowledge about De-lavel turbine

6.Knowledge about spring loaded safety valve

7.Knowledge about Boilers