Course	CO'S	DESCRIPTION
Metallurgy and Material Science & C201	C201.1	Understand the basic concepts of bonds in metals and alloys, and To know the basic requirements for the formation of solid solutions and other compounds.
	C201.2	Identify the regions of stability of the phases that can occur in an alloy system
	C201.3	Identify the differences between cast irons and steels, their properties and practical applications.
	C201.4	Apply the concept of heat treatment of steels & strengthening mechanisms
	C201.5	Identify the properties and applications of widely used non-ferrous metals and their alloys
	C201 .6	Analyze the properties and applications of ceramic, composite materials and other materials, and describe the various methods of component manufacture of composite.
Mechanics of solids & C202	C202.1	Analyze and design structural members subjected to tension, compression, torsion, bending and combined stresses using the fundamental concepts of stress, strain and elastic behavior of materials.
	C202.2	Understand the Shear force and bending moment diagrams for different loads at different supports can be drawn.
	C202.3	Evaluate the bending and shear stress induced in the beams which are made with different cross sections like rectangular, circular, triangular, I, T angle sections.
	C202.4	Analyze the Slope and deflection for different support arrangements by Double integration method, Macaulay's method and Moment-Area are calculated.

	C202.5	Understand the pressure developed in thick and thin cylinders including their failures, and also able to analyze what kind of stresses induced in cylinders subjected to internal, external pressures.
	C202.6	Understand the Shear stresses induced in circular shafts, discussing columns in stability point of view and columns with different end conditions.
Thermo dynamics & C203	C203.1	Understand the thermodynamic systems and apply knowledge to solve problems related to heat & work.
	C203.2	analyze first law of thermodynamics for different thermodynamic systems and for different processes.
	C203.3	Analyze second law of thermodynamics for engines and can solve performance parameters of heat engines.
	C203.4	Understand the concept of steam formation and able to calculate the quality of steam after its expansion in turbines with the help of steam tables.
	C203.5	Analyze the use of psychrometric chart for finding properties of air.
	C203. 6	Identify the power cycles and can calculate efficiency & performance parameters.
Managerial Economics and Financial Analysis & C204	C204.1	Analyze macro, micro economic concepts useful for business units and determine influences of demand and supply analysis
	C204 .2	Understand the Specifications of production functions , types of costs and solving engineering problems by applying knowledge of economics
	C204 .3	Equipped with the consciousness about market structures and pricing methods of industries
	C204 .4	Start an enterprise in their own and identification of different stages of business cycle

	C204 .5	Understand the Knowledge of preparation of accounts, financial statements and their analysis through ratios etc.,
	C204 .6	Significance of financing methods, their applicability in decision making and problem-solving skills according to new trends.
Basic Electrical and Electronics Engineering C205	C205.1	Introduce the basic concepts of electrical circuit analysis, which is the fundamental subject for Mechanical Engineering discipline.
	C205.2	Get the idea on the concepts of R, L &; C parameters, different sources, Kirchhoff's laws, network reduction techniques.
	C205.3	Emphasize the physical understanding of the basic principles underlying the operation of electrical machines.
	C205.4	Understand the Concepts of Transformer, Alternator and 3-Phase Induction motor working in the modern power system.
	C205.5	Get the knowledge on fundamentals of electronic circuits& to identify the components in electronic circuits.
	C205.6	Acquire modern experimental circuits, concepts and devices.
Computer Aided Engineering Drawing Practice C206	C206.1	Understand the projections of solids will be able to acquire knowledge on how to draw the projections and corresponding sections.
	C206.2	Understand the intersection of solids can understand its importance in the field of design and manufacturing.
	C206.3	Analyze the Isometric projections can easily understand iso and perspective views for the given drawings.

	C206.4	Learn basic commands in AutoCAD and can easily understand how to draw 2D and 3D models.
	C206.5	Evaluate the basic geometric model techniques and can easily understand how to draw solids in Isometric, Orthographic and Perspective Projections.
	C206.6	Understand the concept and how to draw solids on complex shapes.
Basic Electrical and Electronics Engineering Lab C207	C207.1	Apply principle of electromechanical energy conversion & to design DC motors.
	C207.2	Implement the design of Transformer, Alternator and 3-Phase Induction motor working in the modern power system.
	C207.3	Apply and integrate major components of electronic devices and circuits to formulate and solve engineering problems.
Mechanics of solids and Metallurgy Lab C208	C208.1	Understand the practical exposure on the microstructures of various ferrous and non ferrous materials
	C208.2	Identify the heat treatment procedures and the change of properties by heat treatment processes
	C208.3	Gain practical knowledge on the evaluation of material properties through various destructive testing procedures.
	C208.4	Evaluate the hardness test on different materials
	C208.5	Evaluate the impact test on different materials
	C208.6	Calculate the swelling coefficient of the materials
	C209.1	Identify the importance and purpose of kinematics, Kinematic joint and mechanism and to study the relative motion of parts in a machine without taking into consideration the forces involved.

Kinematics of Machinery C209	C209.2	Understand the various mechanisms for straight line motion and their applications including steering mechanism.
	C209.3	Understand the velocity and acceleration concepts and the methodology using graphical methods and principles and application of four bar chain, application of slider crank mechanism etc. and study of plane motion of the body.
	C209.4	Identify the theories involved in cams. Further the students are exposed to the applications of cams and their working principles.
	C209.5	Understand about gears, power transmission through different types of gears including gear profiles and its efficiency.
	C209.6	Analyze the various power transmission mechanisms and methodologies and working principles. Students are exposed to merits and demerits of each drive.
Thermal Engineering I (C210)	C210.1	Reason and affect of various losses that occur in the actual engine operation
	C210.2	Familiarize the various engine systems along with their function and necessity
	C210.3	Understand Normal combustion phenomenon and knocking in S.I. and C.I. Engines and can find the several engine operating parameters that affect the smooth engine operation.
	C210.4	Analyze the Testing on S.I and C.I Engines for the calculations of performance and emission parameters
	C210.5	Classify different types of compressors and also can calculate power and efficiency of reciprocating compressors.

	C210.6	Study Mechanical details, power and efficiency of rotary compressors
Production Technology (C211)	C211.1	Make different patterns with wood.
	C211.2	Solve problems related to casting
	C211.3	Understood usage, operations and applications of welding like arc, gas and TIG
	C211.4	Analyze different Welding tests
	C211.5	Understood operations of rolling, drawing and forging etc…
	C211 .6	Grasp the Importance of press working and Plastics etc…
Fluid Mechanics & Hydraulic Machinery (C212)	C212.1	Understand the effect of fluid properties on a flow system.
	C212.2	Analyze the type of fluid flow patterns and use Continuity equitation to one dimensional fluid flow situations.
	C212.3	Impart the Fluid equations (Energy, Momentum and Bernoulli's) in practical applications
	C212.4	Understand the importance of impulse momentum equation to calculate impact of jet on different types of vanes
	C212.5	Analyze the various problems related to pumps and study their performance characteristics.
	C212.6	Analyze the various components of turbines and study their characteristics curves and power output from turbines.
Machine Drawing (C213)	C213.1	Understand the basic concepts of conventional representation and can easily acquire knowledge on different types of engineering materials.
	C213.2	Understand the section of planes and easily understand the different types of views including auxiliary views.

	C213.3	Understand the common abbreviations & their liberal usage of drawings can easily access the development of a section or an assembly with ease.
	C213.4	Understand fasteners one can easily understands the classifications and types of fasteners and different forms of joints as well.
	C213.5	Learn how to draw an assembly and understand how to join the parts together and also can get a sound knowledge on the types of parts that are within the assembly.
	C213.6	Understand how different types of machine parts in an industry look like.
Fluid Mechanics & Hydraulic Machinery Lab (C214)	C214.1	Understand the physical characteristics and basic properties of a fluid.
	C214.2	Familiarize with the various fluid measurement systems, including their advantages and disadvantages.
	C214.3	Understand various fluid flows and in different cross sections through experimental setup in laboratory
	C214.4	Learn the proper procedures for experimental set-up, operation, measurement, adjustment, data gathering, and data reduction for hydraulic pumps
	C214.5	Learn the proper procedures for experimental set-up, operation, measurement, adjustment, data gathering, and data reduction for hydraulic turbines
	C214.6	Present experimental results using explanatory text, data tables, and graphs.
Production Technology Lab (C215)	C215 .1	Understand different patterns, Mould preparation, Melting and Casting
	C215.2	Understand usage, operations and applications of welding like ARC, GAS and TIG
	C215 .3	Analyze Brazing and Soldering operations and their applications
	C215.4	Understand Blanking & Piercing operations with simple, compound and progressive dies on Mechanical

		press
	C215.5	Understand bulk forming processes and sheet metal operations like Deep drawing and sheet bending operations on Hydraulic Press.
	C215 .6	Understand different hallow and solid plastic products using Injection Molding & Blow Molding machines
Thermal Engineering Lab (C215)	C216.1	Understand different mechanisms that work during operation in spark ignition engines.
	C216.2	Understand different mechanisms that work during operation in Compression ignition engines.
	C216.3	Calculate the various efficiencies, various horse powers and energy balance for several types of Compression ignition engines.
	C216.4	Calculate the various efficiencies, various horse powers and energy balance for several types of Internal Combustions Engines
	C216.5	Calculate the various efficiencies, various horse powers for Reciprocating air compressor..
	C216.6	Understand the construction and working of different type of boilers.
Dynamics of Machinery (C301)	C301.1	Analyze the stabilization of sea vehicles, aircrafts and automobile vehicles.
	C301.2	Compute frictional losses, torque transmission of mechanical systems.
	C301.3	Enumerate dynamic force analysis of slider crank mechanism and design of flywheel.
	C301.4	Understood various concepts on design of various types of governors along with other topics such as sensitiveness and hunting.
	C301.5	Understood the methods of balancing of rotating

		masses and balancing of reciprocating masses as well.
	C301.6	Analyze the basics of vibration as well as to find out the methods to calculate the natural frequencies of different systems.
Metal Cutting & Machine Tools (C302)	C302.1	Solve problems related To Cutting Forces, Tool Life and Tool Angles
	C302.2	Understand Lathe operations Using Lathe Machine, Learned how to Use Lathe Tools and Importance of Lathe Machines.
	C302.3	Analyze the Usage, operation s and Applications of Shaping, Slotting, Planning, Drilling and Boring Machines and their Tools
	C302.4	Understand the Usage, operations and Applications of Milling Machines and their Tools like Cutters etc…
	C302.5	Understand the operations and Applications of Grinding Machines and their Tools like Grinding Wheels etc…
	C302.6	Understand the Importance Of Jigs, Fixtures and CNC Machines
Design of Machine Elements I (C303)	C303.1	Understand the design procedure to engineering problems, including the consideration of technical and manufacturing constraints and also Select suitable materials and significance of tolerances and fits in critical design applications
	C303.2	Utilize the design data hand book and can design the elements for strength, stiffness and fatigue and also Identifying the loads, the machine members subjected and calculate static and dynamic stresses to ensure safe design.
	C303.3	Learn and understand different types of failure modes and criteria of riveted , bolted and welded joints and also can design the boiler shells and ship hulls etc.

	C303.4	Impart the procedure for designing different machine elements such as shafts, cotter joints, keys and axial loaded joints and understand the failures if these elements in real life application.
	C303.5	Understand the Procedure for designing different types shaft couplings also should able to understand the failures if these elements in real life application.
	C303.6	Analyze the Procedure for designing different types Mechanical springs also to understand the failures if these elements in real life application.
Instrumentation & control system (C304)	C304.1	Understand with the techniques and use of measuring systems
	C304.2	Select appropriate device for the measurement of parameters like temperature, pressure, speed, stress, humidity, flow velocity etc
	C304.3	Calibrate various instruments and how to apply them in various fields
	C304.4	Gain working knowledge for dealing with basic problems of control system fundamentals
	C304.5	Give justification for the use of instruments through characteristics and performance.
	C304.6	Understand which instrument to be used under various circumstances
Thermal Engineering II (C305)	C305.1	Evaluate the fundamentals as well as basics for power cycles.
	C305.2	Describe various types of boilers as well as their corresponding classifications with necessary advantages and disadvantages.
	C305.3	Classify types of turbines that are in use, also enumerates the velocity diagrams for the turbines, along with the necessary current day applications.

	C305.4	Understand the difference between steam turbine ad gas turbines, along with the various classifications and their limitations as well.
	C305.5	Analyze the principle involved in jet propulsion, enumerated along with schematic diagrams, along with their corresponding thrust power and propulsive efficiency.
	C305.6	Evaluate the difference between various types of liquid propellants that are in use to initiate a rocket engine.
Metrology (C306)	C306.1	Design tolerances and fits for selected product quality.
	C306.2	Understand the standards of length, angles, taper measurement
	C306.3	Study various optical measuring instruments and interferometry
	C306.4	Evaluate the surface finish and different comparators
	C306.5	Inspect various gear elements and thread elements by choosing appropriate method and instruments.
	C306.6	Perform machine tool alignment
Metrology/ Instrumentation & control system Lab (C307)	C307.1	Measurement of various linear, angular dimensions of the products and flatness of the surface by using precision measuring instruments.
	C307.2	Learn how to check various parameters of the threads and gears.
	C307.3	Selection of the appropriate measuring instruments
	C307.4	Knowledge of the requirement of calibration and errors in measurement and perform accurate measurements
	C307.5	Alignment various machines used in manufacturing
	C307.6	Understand the construction and working of various instruments

Machine Tools Lab (C308)	C308.1	Understand lathe working principle and can perform various operations to prepare different shapes of products**.**
	C308.2	Operate drilling machine and can perform various operations to prepare different shapes of products**.**
	C308.3	Operate shaper, slotting and planning machine and can perform various operations to prepare different shapes of products**.**
	C308.4	Understand the surface grinding machine and can perform various operations to prepare different shapes of products**.**
	C308.5	Operate milling machine, with understanding working principle and can perform various operations to prepare different shapes of products**.**
	C308.6	Understand tool and cutter grinding machine and can perform various operations to prepare different shapes of products**.**
IPR & Patents (C309)	C309.1	Gain Knowledge on basic concepts of Intellectual Property , Innovations and Inventions of Intellectual Property Law
	C309.2	Evaluate the principles and rights afforded by Copyright, its infringement and International Copyright Law.
	C309.3	Analyze Patent registration requirements, infringement and Litigation, new developments and international laws
	C309.4	Understand Registration Process of Trade Marks, Interparties proceedings, litigations , claims and global factors related to trade marks
	C309.5	Understand trade Secrets, Employee Confidentiality Agreement, Trade Secret Litigation and breach of law

	C309.6	Elucidate Cyber Law and Cyber Crimes , E-commerce, International aspects of Computer and Online Crime
Operation Research (C310)	C310.1	Develop formulation of the linear programming problem (LPP) from the real world problems and able to apply the suitable method for solving LPP.
	C310.2	Distinguish the importance among the procedure of solving the Transportation Problems, Assignment Problems and solving the Sequential Problems
	C310.3	Analyze the application of the Replacement problems.
	C310.4	Formulate and Solve the Game Theory problems.
	C310.5	Examine and Identify the inventory models and stochastic models and solve them
	C310.6	Interpret and select , the sequencing various jobs and solving various queuing problems.
Interactive Computer Graphics (C311)	C311.1	Use the principles and commonly used paradigms and techniques of computer graphics.
	C311.2	Design programs to display graphic images to given specifications
	C311.3	understand basic graphics application programs including animation
	C311.4	Possess in-depth knowledge of display systems, image synthesis, shape modeling, and interactive control of 3D computer graphics applications
	C311.5	Understand write line drawing, polygon filling programs
	C311.6	Write complex graphics application programs AND Simulation programs
Design of Machine Elements II (C312)	C312.1	Select suitable bearing depending upon the application and can calculate life of the bearing.
	C312.2	Design different I.C Engine parts like cylinder and piston

	C312.3	Design different I.C Engine parts like connecting rod and crank shaft
	C312.4	Design Curved beams having different cross sections.
	C312.5	Design Crane hooks and C-clamps
	C312.6	Design different power transmission elements & Alignment on machine tool elements
Robotics (C313)	C313.1	Understand the automation and brief history of robot and applications.
	C313.2	familiariz with the kinematic motions of robot.
	C313.3	Gain knowledge about robot end effectors and their design concepts.
	C313.4	Analyze the equipped with the Programming methods & various Languages of robots
	C313.5	Analyze equipped with the principles of various Sensors and their applications in robots
	C313.6	Analyze increase the performance and accuracy of robot functioning using various sensor and control systems
Heat Transfer (C314)	C314.1	Understand the basic principles of heat transfer to basic engineering systems and can solve problems involving steady state heat conduction with and without heat generation in simple geometries.
	C314.2	Evaluate heat transfer coefficients for natural and forced convection situations.
	C314.3	Understand the concept of boundary layer formation over heated surfaces during forced and free convection processes.
	C314.4	Understand film wise and drop wise condensation process in condensers and also describe the evaluation of Reynolds and Nusselt numbers for boiling and condensation

	C314.5	Calculate fluid temperatures, mass flow rates, pressure drops, heat exchange and effectiveness during parallel, counter and cross flow in simple and baffled–shell and tube type heat exchangers, condensers, evaporators, etc.
	C314.6	Develop the concept of monochromatic and total radiations, intensity of radiation, shape factor, radiation shields, solar radiation and estimation of radiation heat exchange between two or more surfaces of different geometries.
Industrial Engg. & Management (C315)	C315 .1	Develop a fundamental knowledge and skill sets required in the Industrial Management and Engineering profession
	C315 .2	Design a system, component, or process, and synthesise solutions to achieve desired needs.
	C315 .3	Applu the techniques, skills, and modern engineering tools necessary for engineering practice with appropriate considerations for public health and safety, cultural, societal and environmental constraints.
	C315.4	Function effectively within multi-disciplinary teams and understand the fundamental precepts of effective project management.
	C315.5	Understand their role as engineers and their impact to society at the national and global context.HR
	C315.6	Understand value engineering, implementation procedure, enterprise resource planning and supply chain management
Refrigeration & Air Conditioning (C316)	C316.1	Analyze various refrigerating cycles and evaluate their performance.
	C316.2	Knowledge on vapour compression refrigeration system and can analyze the performance of the system.

	C316.3	Understand the difference between CFC, HCFC and HFC refrigerants and their effect on environment.
	C316.4	Gain knowledge on vapour absorption and steam jet refrigeration system and can analyze the performance of the system.
	C316.5	Perform cooling load calculations and select the appropriate process and equipment for the required comfort and industrial Air-conditioning. Student is having knowledge on the difference between refrigeration and air conditioning systems & sensible and latent heat.
	C316.6	Understand various components of the air conditioning system and their working.
Heat Transfer (C317)	C317.1	Ability to evaluate the amount of heat exchange for plane, cylindrical & spherical geometries in various modes of heat transfer.
	C317.2	Explains the importance of extended surfaces for heat transfer process and to calculate the effectiveness of fins.
	C317.3	Ability to understand and solve conduction, problems using, Fourier's law, Newton's law of cooling , non dimensional numbers.
	C317.4	Ability to understand and solve radiation problems using Stefan Boltzmann constant.
	C317.5	Ability to design and analyze the performance of heat exchangers.
	C317.6	Ability to design and analyze the performance of boilers and condensers.
Automobile engineering C401	C401.1	From this topic basic introduction to automobiles can be easily analyzed, so as for better understanding of concepts further.
	C401.2	Design of various types of transmission systems can be classified along with their working principle, advantages and disadvantages.
	C401.3	The topic describes basic terminology of how a steering system works and also explains various types of steering gear mechanisms that are in use.

	C401.4	Design of major necessities in an automobile such as electrical system, braking system and suspension system can be easily understood from this unit , along with their limitations.
	C401.5	Analyzes the importance of safety system in an automobile and also it evaluates the latest updates in the field of automobile industry. Classifies various types of automobile engines that are in use along with their detailed specifications.
	C401.6	Explains how the emissions/pollutants from automobiles are harmful for humans and also for environment. what are all the necessary steps to be taken to overcome them. national and international pollution standards.
Computer Aided Drafting / Computer Aided Manufacturing C402	C402.1	Improves the basic idea on the history of CAD/CAM hardware, and importance of CAD/CAM in industries.
	C402.2	Learn the mathematical techniques for representation of geometric entities including points, lines, and parametric curves, surfaces and solid, and the technique of transformation of geometric entities using transformation matrix.
	C402.3	To get the knowledge on procedure to write manuscript for a part to be manufactured. Having basic idea on APT language in computer aided part programming for the product development.
	C402.4	Classification of different parts into part families, which are manufacturing in any industry with the knowledge on group technology and learning different techniques which are widely applying in industries.
	C402.5	Having basic knowledge in Process Planning help in understanding the importance in manufacturing industries. And the learning of computer aided quality control enhances their knowledge in applying or using these techniques in the industries.
	C402.6	Can identify various elements and their activities in the Computer Integrated Manufacturing Systems.
Finite Element Method	C403.1	Understanding the concepts of variational methods and weighted residual methods
	C403.2	Identify the application and characteristics of various finite elements such as Bars
	C403.3	Analyze the application and characteristics of various

C403		finite elements such as Beams, Trusses
	C403.4	Analyze the characteristics of constant strain triangle and axi symmetric problems with iso parametric representation
	C403.5	Understanding the characteristics of 4 node quadrilateral element with iso parametric representation
	C403.6	Identify the application of FEM beyond the structural domain for problems of dynamics, heat transfer analysis and fluid flow.
Unconventional Machining Processes C404	C404.1	Understand the mechanics of material removal process parameters and their applications of Ultrasonic machining process
	C404.2	Identify and utilize fundamentals of metal cutting as applied to the Electro chemical machining.
	C404.3	Develop the skills of effective utilization of the cutting fluids and applications for better productivity
	C404.4	Identify and utilize fundamentals of metal cutting as applied to the Electron Beam Machining, Laser Beam Machining
	C404.5	Understand Basic fundamentals of the metal removal mechanism in Plasma Machining process
	C404.6	Can enumerate the fundamentals of mechanics of material removal in Abrasive jet machining, Water jet machining and abrasive water jet machining.
MEMS C405	C405.1	Understanding about difference in behavior of elements when size is reduced to micro scale level and about various fabrication techniques of micro elements. Students are able to understand about mechanical sensors and actuators.
	C405.2	Knowledge about thermal sensors and actuators, devices working under seebeck and peltier effects.
	C405.3	Knowledge about various properties of light and also knows principles of MOEMS technology.
	C405.4	Understanding about magnetic sensors and actuators and also about various effects of magnetization at micro scale level.

	C405.5	Knowledge about micro scale pumping system and handling of micro fluids by considering the physical, chemical, thermal properties of the fluids and also about the working of communication media.
	C405.6	Knowledge about chemical and bio medical sensors and actuators.
Automation In Manufacturing (C406)	C406 .1	Understand the various strategies of automation
	C406 .2	Identify the various manufacturing systems and they can develop manufacturing process with using automation when ever requirement is there
	C406 .3	Apply the line balancing techniques then find out plant layout and production time for each station
	C406 .4	Apply the scheduling techniques then they can reduce excess amount of material or lack of material for production and reduce waiting time in storage
	C406 .5	Understand the control machine with adaptive control system and test the material after completion of production and at intermediate stage
	C406 .6	Understand the various inspection Procedures
Simulation Lab C407	C407.1	Learning 2D modeling tools by using AutoCAD will improves knowledge using different tools which helps in solving real time problems and day to day problems.
	C407.2	To improve various skills in use different tools for drafting while drawing sectional views of different mechanical components and assemble drawings in 2D modeling packages using AUTOCAD.
	C407.3	CATIA Part modeling tools will help in representing various components in more realistic way and can use of these tools for any engineering and real time applications.
	C407.4	Student acquires knowledge on ANSYS will improves their analyzing skills of different areas. Can utilizing these tools for a better project in their curriculum as well as they will be prepared to handle industry problems with confidence when it matters to use these tools in their employment.
	C407.5	To understand the basic procedure to write manual part

		programming using APT language.
	C407.6	Learning the basics in using G and M codes for simple operations like turning and point to point.
Design/fabrication project C408	C408.1	To provide Technical Knowledge on the fundamental aspects and understand the importance,which in turn helps in analyzing the problem
	C408.2	To understand the importance of the present work from the post researches and literatures.Identifying the gaps and techniques to achieve better results
	C408.3	From the identified metholodoligies,advanced techniques can be learnt of design environmental friendly systems and relate cost effectiveness in design and manufacturing
	C408.4	Provides hands on experience with an understanding of design manufacturing aspects
	C408.5	The works carried out can identify suitable applications, leading to enhanced knowledge and building up collective responsibilities
	C408.6	Understand modern manufacturing operations, including their capabilities and limitations
Production Planning and Control & (C409)	C409.1	Understand the types of production, service systems and organization of Production Planning and Control department.
	C409.2	Apply the principles and techniques for planning and control of the production and service systems to optimize/make best use of resources.
	C409.3	Identify the importance and function of inventory and to be able to apply selected techniques for its control and management under dependent and independent demand circumstances.
	C409.4	Understand the concepts of scheduling and concepts of

		bill of material as industrial needs.
	C409.5	Analyze various scheduling methods, line balancing and aggregate planning.
	C409.6	Identify the process of dispatching and follow-up concepts as per industrial needs.
Green Engineering System C410	C410.1	To study the solar radiation data, extraterrestrial radiation, radiation on earth's surface.
	C410.2	To study solar thermal collections.
	C410.3	To study solar photo voltaic systems.
	C410.4	To study maximum power point techniques in solar pv and wind.
	C410.5	To study wind energy conversion systems, Betz coefficient, tip speed ratio.
	C410.6	To study basic principle and working of hydro, tidal, biomass, fuel cell and geothermal systems.
Power Plant Engineering C411	C411.1	To describe various energy resources and types of power plants and types of material handling systems.
	C411.2	To Analyze different types of steam cycles and estimate efficiencies in a steam power plant
	C411.3	To study basic working principles of gas turbine and diesel engine power plants.
	C411.4	To study the working principle of hydro electric power plant and defines the performance characteristics and components of such power plants.
	C411.5	To study the principal components and types of nuclear reactors
	C411.6	To calculate present worth depreciation and cost of different types of power plants and estimates the cost of producing power per kW.
Non-Destructive Evolution	C412.1	Comprehensive, theory based understanding of the techniques and methods of non destructive testing.
	C412.2	Apply methods and knowledge of non destructive testing to evaluate products of railways, automobiles, aircrafts, chemical industries etc.
	C412.3	Ability to communicate their conclusions clearly to specialist and non-specialist audiences.

C412	C412.4	Calibrate the instrument and inspect for in-service damage in the components.
	C412.5	Differentiate various defect types and select the appropriate NDT methods for better evaluation
	C412.6	Sound knowledge of various types of testing methods
MAIN PROJECT C413	C413.1	To provide Technical Knowledge on the fundamental aspects and understand the importance,which in turn helps in analyzing the problem
	C413.2	To understand the importance of the present work from the post researches and literatures.Identifying the gaps and techniques to achieve better results
	C413.3	From the identified metholodoligies,advanced techniques can be learnt of design environmental friendly systems and relate cost effectiveness in design and manufacturing
	C413.4	Provides hands on experience with an understanding of design manufacturing aspects
	C413.5	The works carried out can identify suitable applications, leading to enhanced knowledge and building up collective responsibilities
	C413.6	Understand modern manufacturing operations, including their capabilities and limitations