

COURSE OUTCOMES

DEPARTMENT OF MECHANICAL ENGINEERING



COLLEGE OF ENGINEERING ROORKEE
ACADEMIC YEAR – 2020-21

Preface

This document presents a compilation of the Course Outcomes (COs) for all subjects taught in a program leading to degree in B. **Tech (Mechanical Engineering)**. The COs outline a few (about 5) significant learning outcomes that a student is expected to learn while studying the subject. Besides, each Course Outcome is associated with one or more of the 5 Blooms Taxonomy Levels as listed below:

Bloom's Levels	Bloom's Taxonomy
1	Remember and Understand (Referred to as 'Understand' in all Course outcomes)
2	Apply
3	Analyze
4	Evaluate
5	Create

At the College of Engineering Roorkee (COER), the curriculum is prescribed by the affiliating University. Efforts are made to make the teaching learning process Outcome Based Education (OBE) oriented. Outcome-based education offers a powerful managing technical education to be effective in its goals.

The OBE process started at COER systems in 2018 and went through evolution phases. This document presents consolidated Course Outcomes (CO) of the all courses offered in the academic year 2020-21. For this purpose, Course Outcome (CO) committees were formed, which consisted Dean Academics, Head of the Department and a senior faculty members of the respective departments. They defined COs for each course by referring to contents of the respective syllabus. Bloom's Taxonomy levels were also assigned for each identified CO.

Head

Dean Academics

Teaching Scheme: B.Tech.(Mechanical Engineering)
Semester: 3rd

S. No	Subject's Title	Subject Code	L	T	P	Credits
1	Mathematics-III	BEST 301	3	1	0	4
2	Basic Thermodynamics	BMET 302	3	1	0	4
3	Materials science &Technology	BMET303 BMEP 303	3	0	2	4
4	Strength of materials	BMET 304 BMEP 304	3	1	2	5
5	Manufacturing science & Technology 1	BMET 305 BMEP 305	3	0	2	4
6	Programming Practices (Introduction MATLAB)	BCST-307	0	0	4	2
7	Evaluation of Internship- I Completed at First Year level	BAST 107	0	0	4	2
8	CYBER Security	BCST-308	0	0	0	0

Semester: 4th

S. No	Subject's Title	Subject Code	L	T	P	Credits
1	Applied Thermodynamics Engineering	BMET 401 BMEP 401	3	1	2	5
2	Energy & Environmental Engineering	BECT 402	3	1	0	4
3	Theory of Machines	BMET 403 BMEP 403	3	1	2	5
4	Fluid Mechanics	BMET 404 BMEP 404	3	1	2	5
5	Manufacturing Science & Technology-II	BMET 405 BMEP 405	3	0	0	3
6	Universal Human Values-2	BECT 406	2	1	0	3

Semester: 5th

S. No	Subject's Title	Subject Code	L	T	P	Credits
1	Industrial Engineering & Ergonomics	BMET 501	3	0	0	3
2	Machine Component Design-I	BMET 502	3	0	4	5
3	Heat & Mass Transfer	BMET 503	3	1	2	5
4	IC Engine	BMET 503 (A)	3	0	0	3
5	Principle of Management	BMET 504 (B)	3	0	0	3
6	Machine Drawing Lab with Auto Cad	BMET 506	0	0	4	2
7	Evaluation of Internship-II Completed at II Year Level	BECP 307	0	0	2	1

Semester: 6th

S. No	Subject's Title	Subject Code	L	T	P	Credits
1	Turbo Machinery	BMET 601 BMEP 601	3	1	2	5
2	Machine Component Design-II	BMET 602 BMEP 602	3	0	4	5
3	Refrigeration & Air-conditioning	BMET 603 BMEP 603	3	1	2	5
4	Product Design	BMET 604 (C)	3	0	0	3
5	Renewable Energy Technology	BMET 605 (C)	3	0	0	3
6	Minor Project-I	BMET-607	0	0	4	2

Semester: 7th

S. No	Subject's Title	Subject Code	L	T	P
1	CAD/CAM	TME 701 PME 751	3	1	2
2	Maintenance & Safety	TME 702	3	1	0
3	Energy Conservation	TME 703	3	1	0
4	Entrepreneurship Development Program	TOE 05	3	1	0
5	Advance Welding Process	TME 014	3	1	0
6	Industrial Training	PME 752	0	0	2
7	Project	PME 753	0	0	2
8	Seminar	PME 754	0	0	2

Semester: 8th

S. No	Subject's Title	Subject Code	L	T	P
1	Power Plant Engineering	TME 801	3	1	0
2	Automobile Engineering	TME 802 PME 852	3	1	2
3	Unconventional Manufacturing Process	TME 034	3	1	0
4	Total Quality Management	TME 020	3	1	0
5	Project	PME 853	0	0	2

Program Educational Objectives (PEOs)

PEO1 To enhance the foundation and the knowledge-base of students in various fields of mechanical engineering and to make them capable for effectively analyzing and solving the problems associated in this field.

PEO2 To deliver comprehensive education in mechanical engineering to ensure that the students have core competency to be successful in industry or research laboratory and motivate them to pursue higher studies and research in interrelated areas.

PEO3 To encourage the students to take up real life and/or research related problems and to create innovative solutions of these problems through comprehensive analysis and designing.

PEO4 To provide an academic environment that gives adequate opportunity to the students to cultivate lifelong skills needed for their successful professional career.

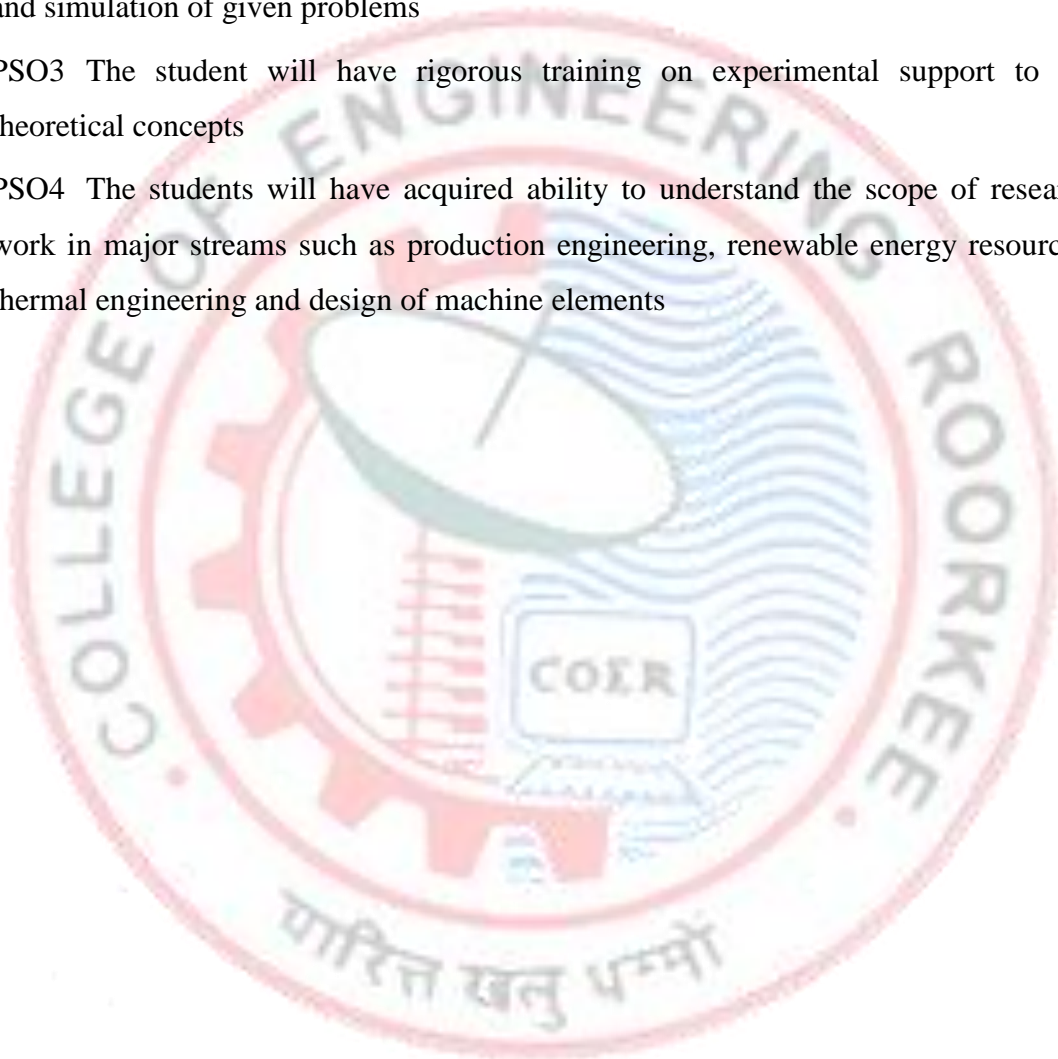
Program Specific Outcomes (PSOs)

PSO1 The students will acquire comprehensive understanding of concepts, analysis, operation and performance of all major aspects of mechanical engineering such as manufacturing process & industrial automation, thermal engineering, refrigeration & air-conditioning systems and machine design

PSO2 The students will have knowledge of analytical tools for developing modelling and simulation of given problems

PSO3 The student will have rigorous training on experimental support to the theoretical concepts

PSO4 The students will have acquired ability to understand the scope of research work in major streams such as production engineering, renewable energy resources, thermal engineering and design of machine elements



Program Outcomes (POs)

PO1 Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2 Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3 Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4 Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5 Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6 The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7 Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8 Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9 Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10 Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11 Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as

a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12 Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.



Course Outcomes (COs)

Course Name: BASIC THERMODYNAMICS

Course Code: BMET-302

The students will be able to

COs	COURSE OUTCOMES	BLOOM'S TAXONOMY
CO1	To be able to understand fundamental knowledge of laws and principles of thermodynamics.	Remember, Understand
CO2	To be able to apply the knowledge of heat and work transfer and their effect, application of first law of thermodynamics to different machines as well as second law of thermodynamics.	Apply
CO3	To be able to analyze the knowledge of steady flow energy equation and its use in compressor, turbines, nozzles, evaporators etc.	Analyze
CO4	To be able to evaluate the quality of energy and its balance	Evaluate
CO5	To be able to analyze the conversion of heat into work from different cycle	Analyze

Course Name: MATERIAL SCIENCE & TECHNOLOGY

Course Code: BMET-303

The students will be able to

COs	COURSE OUTCOMES	BLOOM'S TAXONOMY
CO1	Be able to understand and analyze the Structure of materials at different levels, basic concepts of crystalline materials like unit cell, FCC, BCC, HCP, APF (Atomic Packing Factor), Co-ordination Number etc.	Understand, Analyze
CO2	Be able to understand concept of mechanical behavior of materials and calculations of same using appropriate equations.	Remember, Understand
CO3	Be able to understand the concept of phase and phase diagram and understand the basic terminologies associated with metallurgy.	Understand
CO4	Be able to understand and suggest the heat treatment process and types. Significance of properties Vs microstructure. Surface hardening and its types. Introduce the concept of hardenability and demonstrate the test used to find hardenability of steels.	Analyze, Evaluate
CO5	Be able to understand the various Non-Metallic Materials and their uses.	Understand, Analyze

Course Name: STRENGTH OF MATERIALS

Course Code: BMET-304

The students will be able to

COs	COURSE OUTCOMES	BLOOM'S TAXONOMY
CO1	Understand and distinguish the behavior of simple load carrying members subjected to an axial, shear and thermal Loading.	Remember, Understand
CO2	Draw and Compare the shear force and bending moment diagram on beams under varying load conditions.	Apply, Analyze
CO3	Analyze the failure of materials under different loading conditions. Differentiate in strain energy stored in a body when the load is suddenly applied and gradually applied.	Analyze
CO4	Assess Bending and shear stresses in beams subjected to different loadings for different machine parts. Evaluate stresses in thick and thin cylinders.	Analyze, Evaluate
CO5	Design the mechanical components according to the failure stresses for the different types of materials using various theories of failures.	Create

Course Name: Manufacturing Science and Technology I
Course Code:BMET-305

The students will be able to

COs	COURSE OUTCOMES	BLOOM'S TAXONOMY
CO1	To be able to understand different manufacturing processes, materials and their properties.	Remember, Understand
CO2	To be able to apply the fundamentals of solid mechanics and fluid mechanics to calculate different parameters in manufacturing processes –casting and forming.	Apply
CO3	To be able to analyze the manufacturing processes i. e. casting, forming and sheet metal working process etc.	Analyze
CO4	To be able to justify the selection of a particular process and material to manufacture the product.	Evaluate
CO5	To be able to design and execute the manufacturing processes to create the product based on need analysis.	Analyze, Evaluate,Create

Course Name: APPLIED THERMODYNAMICS ENGINEERING

Course Code: BMET-401

The students will be able to

COs	COURSE OUTCOMES	BLOOM'S TAXONOMY
CO1	To be able to draw the layout of thermal power plant.	Remember, Understand
CO2	To be able to explain the working of different component used in thermal power plant like boiler, turbine, condenser etc.	Remember, Understand
CO3	To be able to apply first and second law of thermodynamics to different device like turbine, compressor etc.	Apply
CO4	To be able to analyze the performance of thermodynamics parameter on the efficiency of thermal power plant	Analyze
CO5	To be able to Evaluate the efficiency of thermal power plant using ranking cycle.	Evaluate

Course Name: ENERGY AND ENVIRONMET

Course Code: BECT-402

The students will be able to

COs	COURSE OUTCOMES	BLOOM'S TAXONOMY
CO1	Be able to Understand issues related to environment and their impact on the human life.	Remember Understand
CO2	Be able to understand the need of making public aware about the environment	Remember, Understand
CO3	Be able to understand different components of environment and apply suitable functions for its sustainable development.	Understand Apply
CO4	Be able to analyze the issues related to environmental pollution and its effect on living.	Analyze
CO5	Be able to analyze the methods of solid waste disposal and create newer and cleaner disposal methods	Analyze Create

Course Name: THEORY OF MACHINES

Course Code: BMET-403

The students will be able to

COs	COURSE OUTCOMES	BLOOM'S TAXONOMY
CO1	Be able to understand the principles of kinematic pairs, chains and their classification, DOF, inversions, equivalent chains and planar mechanisms.	Understand
CO2	Be able to make use of different methods to determine the velocity and acceleration in planar mechanisms.	Apply, Create
CO3	Be able to analyze balancing problems in rotating and reciprocating machinery.	Analyze
CO4	Be able to identify appropriate gears and gear trains for particular application	Analyze, Evaluate
CO5	Be able to analyze and design centrifugal governors and Construct the cam profile for specific follower motion.	Analyze, Create

Course Name: Fluid Mechanics

Course Code: BMET-404

The students will be able to

COs	COURSE OUTCOMES	BLOOM'S TAXONOMY
CO1	Understanding of basics of fluid mechanics their functioning and selection. Students will be able to state the Newton's law of viscosity and to explain the mechanics of fluids at rest and in motion by studying the fluid flow phenomenon.	Understand, Remember,
CO2	Compute force of buoyancy on a partially or fully submerged body. Students are able to apply knowledge in the design of dams, design of flying bodies and fluid flow.	Apply
CO3	Analyze the fluid flow problems. Students will be able to examine energy losses in pipe transitions and sketch energy gradient lines.	Analyze
CO4	Evaluation of forces drag and lift on body. Students will also be able to evaluate hydrostatic pressure and force on plane and curved surface.	Evaluate

Course Name: Manufacturing Science and Technology II
Course Code:BMET405

The students will be able to

COs	COURSE OUTCOMES	BLOOM'S TAXONOMY
CO1	To be able to define the machining and welding processes and their types.	Remember, Understand
CO2	To be able to demonstrate knowledge on different machine practically.	Apply
CO3	To be able to calculate the different parameters in machining.	Analyze, Evaluate
CO4	To be able to analyze the all types of machining process.	Analyze
CO5	To be able to make the jobs using machining, welding etc.	Analyze, Evaluate, Create

Course Name: INDUSTRIAL ENGINEERING AND ERGONOMICS
Course Code: BMET-501

The students will be able to

COs	COURSE OUTCOMES	BLOOM'S TAXONOMY
CO1	Be able to understand productivity and work study.	Remember, Understand
CO2	Be able to apply plant layouts and understanding the application of material handling equipment.	Apply, Understand
CO3	Be able for understanding of managerial economics	Apply, Analysis, Evaluate
CO4	Be able to apply the concept of Inventory and supply chain management.	Apply
CO5	Be able understand job evaluation method and merit rating.	Apply, Analysis, Evaluate

Course Name: MACHINE COMPONENT DESIGN-1
Course Code:BMET-502

The students will be able to

COs	COURSE OUTCOMES	BLOOM'S TAXONOMY
CO1	To be able to apply the knowledge gained in solid mechanics in designing of joints, shafts, keys and coupling along with design against static and fluctuating load.	Remember, Understand, Analyze
CO2	To be able to apply the knowledge gained in solid mechanics in design machine elements to withstand the loads and deformation.	Remember, Understand, Apply
CO3	To be able to analyze the design of power screw, mechanical springs and introduction to product development and design process	Remember, Understand, Analyze
CO4	To be able to understand the design aspects of Journal and Rolling contact bearings	Understand, Analyze, Evaluate
CO5	To be able to evaluate the design of Brakes and Clutches against static and fluctuating loads.	Understand, Analyze

Course Name: HEAT & MASS TRANSFER

Course Code: BMET-503

The students will be able to

COs	COURSE OUTCOMES	BLOOM'S TAXONOMY
CO1	To be able to mathematically formulate and analyze heat transfer system by conduction mode	Remember, Understand, Analyze
CO2	To be able to apply the conduction heat transfer knowledge on fins which are used in various applications	Apply
CO3	To be able to apply the knowledge of fluid flow and convection heat transfer to analyze the thermal system	Apply, Analyze, Evaluate
CO4	To be able to analyze radiative heat transfer system	Analyze
CO5	To be able to analysis of performance the thermal design of various heat exchangers	Analyze, Evaluate

Course Name: INTERNAL COMBUSTION ENGINES

Course Code:BMET 504-(A)

The students will be able to

COs	COURSE OUTCOMES	BLOOM'S TAXONOMY
CO1	Be able to define the fundamental concepts of IC engine and its working principles.	Understand, Apply
CO2	Be able to define basic concepts of actual cycles and its analysis	Understand
CO3	Be able to reproduce the combustion phenomenon in SI and CI engines.	Understand, Analyze
CO4	Be able to categorize different Fuel injection systems and evaluate performance of IC engines.	Analyze, Evaluate
CO5	Be able to discuss the importance of alternative fuels, cooling and lubrication system.	Understand, Remember

Course Name: Turbo Machinery
Course Code:BMET-601

The students will be able to

COs	COURSE OUTCOMES	BLOOM'S TAXONOMY
CO1	Understanding of basics of Turbo Machines and their functioning and selection. Classify turbo machines and discuss the importance of dimensionless numbers in turbo machines.	Remember, Understand
CO2	Apply thermodynamic concepts to analyze turbo machines and evaluate overall efficiency, power delivered , reheat factor.	Apply, Evaluate
CO3	Understand and analyze centrifugal compressor. Plot vector diagrams and evaluate work done, temp and pressure ratio, slip factor, work input factor, pressure coefficient.	Understand , Analyze, Evaluate
CO4	Knowledge of hydro turbines (Pelton, Frances and Kaplan turbines) and centrifugal pump. Application of dimensional analysis and similarity to water turbines and centrifugal pumps, unit and specific quantities, selection of machines.	Understand, Analyze, Apply
CO5	Design axial flow compressor. Plot vector diagrams and calculate , work done factor, temp and pressure ratio, degree of reaction.	Evaluate

Course Name: MACHINE COMPONENT DESIGN-2

Course Code: BMET-602

The students will be able to

COs	COURSE OUTCOMES	BLOOM'S TAXONOMY
CO1	To be able to analyze the stress and strain on mechanical components; and understand, identify and quantify failure modes and design for mechanical parts (Gears and Bearings).	Remember, Understand, Analyze
CO2	To be able to select appropriate gears for power transmission on the basis of given load and speed.	Remember, Understand, Apply
CO3	To be able to understand the standard geometry, application, failures of gear and design and developed gears for different loading conditions	Remember, Understand, Analyze
CO4	To be able to select bearings for a given applications from the manufacturers catalogue.	Understand, Analyze, Evaluate
CO5	To be able to design and develop bearings under different loading conditions	Understand, Analyze, create

Course Name:REFRIGERATION AND AIR CONDITIONING

Course Code: BMET-603

The students will be able to

COs	COURSE OUTCOMES	BLOOM'S TAXONOMY
CO1	Be able to interpret the working principles and applications of refrigeration systems.	Understand
CO2	Be able to interpret the vapour compression refrigeration system and identify methods for Performance improvement.	Understand, Apply
CO3	Demonstrate the working principles of air,vapour absorption, thermoelectric and estimate the condition of steam and performance of vapour power cycle and vapour compression cycle.	Apply, Analyze
CO4	Be able to analyze air-conditioning processes using the principles of psychrometry and estimate various essential properties related to Psychrometry and processes.	Analyze
CO5	Be able to evaluate cooling and heating loads in an air-conditioning system.	Analyze, Evaluate

Course Name:PRODUCT DESIGN
Course Code: BMET-604C

The students will be able to

COs	COURSE OUTCOMES	BLOOM'S TAXONOMY
CO1	Understand Product Design using Value Engineering is conceptualized and planned in such a way that it helps both job creators as well as job seekers	Remember, Understand
CO2	To be able to understand need of a new product, the product design process, the application of Value Engineering principles in product design process	Remember, Understand, apply
CO3	To be able to evaluate difference between the concept of Value Engineering and Cost Cutting.	Evaluate
CO4	To be able to understand the Value Engineering Job Plan (VEJP), especially in context of the product design process.	Understand
CO5	To be able to understand the different types of product functions, their identification, definition, analysis, various concepts, such as function-cost relationship with relevant and specific examples/ case studies.	Understand, Analyze

Course Name: RENEWABLE ENERGY TECHNOLOGY
Course Code: BOME-605(C)

The students will be able to

COs	COURSE OUTCOMES	BLOOM'S TAXONOMY
CO1	To be able to understand the need of energy conversion and the various methods of energy storage	Remember, Understand
CO2	To be able to analyze various extraction techniques of renewable energy sources for different applications.	Remember, Understand, Analyze
CO3	To be able to analyze renewable energy systems for various environmental conditions	Remember, Understand, Analyze
CO4	To be able to categorize various energy conversion systems and its limitations.	Understand, Analyze, Evaluate
CO5	To be able to illustrate the concepts of direct energy conversion systems and their applications.	Understand, Analyze

Course Name:CAD CAM

Course Code: TME-701

The students will be able to

COs	COURSE OUTCOMES	BLOOM'S TAXONOMY
CO1	Understand the structure of CAD workstation, Memory types, input/output devices and computer graphics.	Remember, Understand
CO2	Acquire knowledge of geometric modeling, drawing algorithms as well as mathematical representation of curves. Students will be able to perform transformations in 2D and 3D objects.	Remember, Understand. Apply
CO3	Understand various applications of CAD software and part programming.	Understand, Apply
CO4	Apply knowledge of finite element methods for solving a problem using application of FEM software	Apply, Analyze
CO5	Create CNC program for milling, drilling and lathe operations.	Evaluate, Create

Course Name: MAINTENANCE & SAFETY ENGINEERING
Course Code: TME-702

The students will be able to

COs	COURSE OUTCOMES	BLOOM'S TAXONOMY
CO1	Be able to understand the principles and objectives of Maintenance Engineering.	Understand
CO2	Be able to describe the various categories of maintenance and analyze the various parameters of life testing of components such as MTTF, MTBF and reliability.	Analyze, Evaluate
CO3	Be able to different maintenance strategies and the preventive inspection of equipment used in emergency, replacement planning, and replacement of items is studied.	Understand, Analyze
CO4	Be able to discuss various condition monitoring techniques.	Remember, Understand
CO5	Be able to understand the concept of engineering industry, safety in engineering industry along with maintenance management.	Understand

Course Name:ENERGY CONSERVATION

Course Code: TME-703

The students will be able to

COs	COURSE OUTCOMES	BLOOM'S TAXONOMY
CO1	Identify the demand-supply gap of energy in the Indian scenario.	Understand
CO2	Carry out an energy audit of an industry/Organization.	Apply
CO3	Draw the energy flow diagram of industry and identify the energy wasted or a waste stream.	Analyze
CO4	Select an appropriate energy conservation method to reduce the wastage of energy.	Analyze
CO5	Evaluate the techno-economic feasibility of the energy conservation technique adopted.	Evaluate

Course Name:ADVANCED WELDING TECHNOLOGY

Course Code: TME-014

The students will be able to

COs	COURSE OUTCOMES	BLOOM'S TAXONOMY
CO1	Be able to understand various advanced welding techniques which make them interested to choose a career in the field of welding.	Remember Understand
CO2	Students will understand the advanced welding practices in Industries and their comparative merits and demerits.	Apply
CO3	Students will be able to choose appropriate welding technique suitable for joining various types of metals.	Apply, Analyze Evaluate
CO4	Students will be prepared to demonstrate technical understanding of new technology and processes in the welding industry	Remember, Understand
CO5	Students will be able to evaluate potential hazards and apply procedures to maintain workplace safety; demonstrate appropriate safe work habits when operating oxy fuel, plasma and electric welding equipment and function safely in a welding environment	Apply, Analyze, Evaluate

Course Name:ENTREPRENEURSHIP DEVELOPMENT PROGRAM

Course Code: TOE-05

The students will be able to

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COs	COURSE OUTCOMES	BLOOM'S TAXONOMY
CO6	Be able learn about Basic knowledge of entrepreneurship and types of industry.	Remember, Understand
CO7	Be able to understand Project identification, evaluation, demand analysis.	Remember, Understand
CO8	Be able to understand Basics of accountancy and project planning and control.	Understand, Apply
CO9	Be able to understand the systematic process to select and screen a business idea.	Analyze, Evaluate
CO10	Be able to understand Income tax and other laws concerning entrepreneur.	Understand, Apply

Course Name:POWER PLANT ENGINEERING

Course Code: TME-801

The students will be able to

COs	COURSE OUTCOMES	BLOOM'S TAXONOMY
CO1	Identify and classify various sources of energy	Understand, Apply
CO2	Understand and classify power plants like steam, gas turbine, hydro-electric and nuclearbased on the requirement.	Understand, Apply
CO3	Gain knowledge regarding equipment, plant layout, the principle of working of various diesel and gas turbine plants.	Apply
CO4	Familiarize with the basic components and working principles of various nuclear reactors.	Analyze
CO5	Survey and decide about resources available to install a power plant to attain long term goals.	Analyze,Evaluate, Create

Course Name:AUTOMOBILE ENGINEERING

Course Code:TME-802

The students will be able to

COs	COURSE OUTCOMES	BLOOM'S TAXONOMY
CO1	Be able to identify the different parts of the automobile.	Remember, Understand
CO2	Be able to explain the working of various parts like engine,transmission,clutch ,brakes etc.	Apply
CO3	Be able to describe how the steering and suspension system operate.	Understand
CO4	Be able to understand the environmental implication of automobile emissions.	Understand
CO5	Be able to develop a strong base for understanding future developments in automobile industry.	Apply, Evaluate

Course Name:UNCONVENTIONAL MANUFACTURING PROCESS

Course Code:TME-034

The students will be able to

COs	COURSE OUTCOMES	BLOOM'S TAXONOMY
CO1	Understand the need for unconventional machining processes in comparison with conventional manufacturing processes.	Remember, Understand
CO2	Apply the working principle and application of various unconventional machining processes.	Apply
CO3	Examine the effect of process variables over the material removal rate and surface finish of various unconventional machining processes.	Apply, Analyze
CO4	Employ the suitable unconventional machining process for a given material and machining condition, or application. Compare the merits, demerits and applications of unconventional machining process.	Apply
CO5	Understand analyze and evaluate, machining of the hard material using Electro-Discharge machining, Electro-chemical machining, Ultrasonic machining, Abrasive jet machining etc.	Analyze, Understand. Evaluate

Course Name:TOTAL QUALITY MANAGEMENT

Course Code:TME-020

COs	COURSE OUTCOMES	BLOOM'S TAXONOMY
CO1	Be able to gain basic knowledge in total quality management relevant to both manufacturing and service industry including IT sector.	Remember, Understand
CO2	Be able to implement the basic principles of TQM in manufacturing and service based organization.	Apply, Analyze
CO3	Be able to apply the tools and techniques of quality management to manufacturing and services processes.	Apply
CO4	Be able to apply quality function identification of defects, corrective measure related to quality management of manufacturing and services processes.	Apply, Analyze, Evaluate
CO5	Be able to gain the knowledge on various ISO standards and quality systems.	Remember, Understand