Shree Santkrupa Institute of Engineering and Technology

Department of Mechanical Engineering

Academic Year: 2021-22

Semester: III

Sr. No.	Course Code	Course Name	Lecture	Tutorial	Practical	Credit
1	BTMC302	Fluid Mechanics	3	1		4
2	BTMC304	Material Science and Metallurgy	3	1		4
3	BTMC303	Thermodynamics	3	1		4
4	BTMCL305	Machine Drawing & CAD Lab			4	2
5	BTBS301	Engineering Mathematics -III	3	1		4
6	BTMCL306	Mechanical Engineering Lab-I			4	2
7	BTES209P	IT-1 Evaluation				1
8		Constitution of India				Audit

Semester: IV

Sr. No.	Course Code	Course Name	Lecture	Tutorial	Practical	Credit
1	BTMC401	Manufacturing Process-I	3	1		4
2	BTMC402	Theory of Machine-I	3	1		4
3	BTHM403	Basic Human Rights	3			3
4	BTMC404	Strength of Materials	3	1		4
5	BTMPE405A	Numerical Methods & Technology	3	1		4
6	BTMCL406	Mechanical Engineering lab-II			4	2
7	BTMI407	IT-2 Evaluation				Credits to be evaluated in Sem V

Semester: V

Sr. No.	Course Code	Course Name	Lecture	Tutorial	Practical	Credit
1	BTMEC501	Heat Transfer	3	1		4
2	BTMEC503	Machine Design-I	2	1		3
3	BTMEC504	Theory of Machine-II	3	1		4

4	BTMEC502	Applied Thermopdynamics-I	2	1		3
5	BTMEC505	Metrology & Quality Control	2	1		3
6	BTID506	Product Design Engineering-II	1		2	2
7	BTMEC506A	Automobile Engineering	3			Audit
8	BTMEL507	Heat Transfer Lab			2	1
9	BTMEL508	Applied Thermopdynamics Lab			2	1
10	BTMEL509	Machine Design Practice-I			2	1
11	BTMEL510	Theory of Machine Lab-II			2	1
12	BTMEF511	Industrial Training-II				1

Semester: VI

Sr. No.	Course Code	Course Name	Lecture	Tutorial	Practical	Credit
1	BTMEC601	Manufacturing Process-II	2	1		3
2	BTMEC602	Machine Design-II	3	1		4
3	BTMEC603	Applied Thermodyamics-II	2	1		3
4	BTMEC604B	IC Engine	2	1		3
5	BTMEC605C	Renewable energy Sources	3			3
6	BTMEC606C	Human Resource management	3			Audit
7	BTMEL607	Metrology & Quality Control Lab			2	1
8	BTMEL608	Machine Design Practice-II			2	1
9	BTMEL609	IC Engine Lab			2	1
10	BTMEL610	Refrigeration & Air conditioning Lab			2	1
11	BTMEM611	Technical Project for community Service			4	2

Semester: VII

Sr. No.	Course Code	Course Name	Lecture	Tutorial	Practical	Credit
1	BTMEC701	Mechatronics	2	1		3
2	BTMEC702	CAD/CAM	2	1		3
3	BTMEC703	Manufacturing Process-III	2	1		3
4	BTMEC704B	Industrial Engineering and Management	2	1		3
5	BTMEC705D	Knowledge Management	3			Audit
6	BTMEL706	Manufacturing Process Lab -II			2	1
7	BTMEL707	Mechatronics Lab			2	1
8	BTMEL708	CAD/CAM Lab			2	1
9	BTMES709	Seminar			2	1
10	BTMEF710	Industrial Training-III				1

11	BTMEP711	Project Stage-I			6	3

Semester: VIII

Sr. No.	Course Code	Course Name	Lecture	Tutorial	Practical	Credit
1	BTMEC801A	Fundamental of Automotive system				3
2	BTMEC801F	Non Conventional Energy Resources				3
3	BTMEP803	Project Stage-II			30	15

Course Outcomes

Semster : III		
Course Name		**Engineering Mathematics – III**
Course Code		**BTBS301**
Course Outcome No	**Course Outcome Statement**	**By the end of the course, students will be able to:**
CO 1	Explain the application of the Laplace Transform to find solutions of system of linear equations arising in many engineering problem.	
CO 2	Demonstarte and apply the concept Laplace Transform.	
CO 3	Interpret Computation of Fourier Transform and their applications to engineering problems.	
CO 4	Identify Partial Differential Equations and Their Applications.	
CO 5	Evaluate Functions of Complex Variables.	
Semster : III		
Course Name		**Fluid Mechanics**
Course Code		**BTMC302**
Course Outcome No	**Course Outcome Statement**	**By the end of the course, students will be able to:**
CO 1	Define fluid and various properties of the fluid, determine hydrostatic forces on the plane and curved surfaces, and explain the stability of floating bodies.	
CO 2	Explain various types of flow, Determine the acceleration of fluid particles.	
CO 3	Apply Bernoulli’s equation to simple problems in fluid mechanics.	
CO 4	Explain and solve simple problems related to the use of dimensional analysis, boundary layer theory, and drag and lift force.	
CO 5	Explain the construction and working of centrifugal pumps.	
Semster : III		
Course Name		**Thermodynamics**
Course Code		**BTMC303**

Course Outcome No	Course Outcome Statement	By the end of the course, students will be able to:
CO 1	Define the terms like system, boundary, properties, equilibrium, work, heat, ideal gas, entropy etc. used in thermodynamics	
CO 2	Discuss different laws of thermodynamics and use these to simple thermal systems like balloon, piston-cylinder arrangement, compressor, pump, refrigerator, heat exchanger, etc. to study energy balance.	
CO 3	Interpret various types of processes like isothermal, adiabatic, etc. considering system with ideal gas and represent them on p-v and T-s planes.	
CO 4	Describe phase diagram of pure substance (steam) on different thermodynamic planes like p-v, T-s, h-s, etc. & show various constant property lines on them.	
Semster : III		
Course Name		**Material Science and Metallurgy**
Course Code		**BTMC304**
Course Outcome No	**Course Outcome Statement**	**By the end of the course, students will be able to:**
CO 1	identify the properties of metals with respect to crystal structure and grain size.	
CO 2	aquire the knowledge of solidification, phase & equilibrium diagram for different materials	
CO 3	describe the concept of heat treatment of steels & strengthening mechanisms.	
CO 4	prepare samples of different materials for metallography	
CO 5	explain the failure theory, fracture, fatigue properties and NDT testing for different materials.	
Semster : III		
Course Name		**Machine Drawing & CAD Lab**
Course Code		**BTMCL305**
Course Outcome No	**Course Outcome Statement**	**By the end of the course, students will be able to:**
CO 1	Interpret the object with the help of given sectional and orthographic views.	
CO 2	Construct the curve of intersection of two solids	
CO 3	Outline the machine element using keys, cotter, knuckle, bolted and welded joint	
CO 4	Organize details of any given part. i. e. valve, pump , machine tool part etc.	
CO 5	Make use of tolerances and level of surface finish on production drawings	
Semster : III		
Course Name		**Mechanical Engineering Lab-I**
Course Code		**BTMCL306**
Course Outcome No	**Course Outcome Statement**	**By the end of the course, students will be able to:**
CO 1	Apply Bernoulli’s theorem, determine the metacentric height of the floating body.	
CO 2	Determine pressure drop in flow through pipes, pipe fittings, and critical Reynolds number using Reynolds apparatus.	
CO 3	Interpret momentum equation using impact of jet apparatus and determine the viscosity of a given oil sample using a viscometer.	

CO 4	prepare samples of different materials for metallography.
CO 5	explain the failure theory, fracture, fatigue properties and NDT testing for different materials.
Semster : IV	
Course Name	**Manufacturing Process-I**
Course Code	**BTMC401**
Course Outcome No / **Course Outcome Statement**	**By the end of the course, students will be able to:**
CO 1	identify castings processes, working principles and applications and list various defects in metal casting.
CO 2	aquire the knowledge the various metal forming processes, working principles and applications.
CO 3	classify the basic joining processes and demonstrate principles of welding, brazing and soldering.
CO 4	study center lathe and its operations including plain, taper turning, work holding devices and cutting tool.
CO 5	describe milling machines operations, cutters ,indexing mechanism and their types and related tooling's.
Semster : IV	
Course Name	**Theory of Machine-I**
Course Code	**BTMC402**
Course Outcome No / **Course Outcome Statement**	**By the end of the course, students will be able to:**
CO 1	Perform graphically kinematic analysis of any planar mechanism using ICR and RV methods.
CO 2	Perform graphically kinematic analysis of slider crank mechanism using Klein's construction.
CO 3	Perform graphically kinematic analysis of slider crank mechanism using Klein's construction.
CO 4	Sketch polar diagram for a Hooke's joint.
Semster : IV	
Course Name	**Basic Human Rights**
Course Code	**BTHM403**
Course Outcome No / **Course Outcome Statement**	**By the end of the course, students will be able to:**
CO 1	Explain the history of human rights.
CO 2	Recall responsibilities of others caste, religion, region and culture.
CO 3	Remember the importance of groups and communities in the society.
CO 4	Analyse the philosophical and cultural basis and historical perspectives of human
CO 5	Aware of their responsibilities towards the nation.
Semster : IV	
Course Name	**Strength of Materials**
Course Code	**BTMC404**

Course Outcome No	Course Outcome Statement	By the end of the course, students will be able to:
CO 1	Define the fundamental terms such as axial load, eccentric load, stress, strain, E, μ, etc.	
CO 2	Compare the various stress types and determine the value of stress developed in the component in various load cases.	
CO 3	Distinguish between uniaxial and multiaxial stress situations and determine principal stresses, τmax. Shear stress, their planes, and τmax. Normal and shear stresses on a given plane.	
CO 4	Analyze given beam for calculations of SF and BM, Explain the use of C- Programming in the strength of materials.	
CO 5	Determine slope and deflection at a point on cantilever /simply supported beam using various methods.	
Semster : IV		
Course Name		**BTMPE405A**
Course Code		**Numerical Methods in Mechanical Engineering**
Course Outcome No	**Course Outcome Statement**	**By the end of the course, students will be able to:**
CO 1	Discuss the concept of error.	
CO 2	Illustrate the concept of various Numerical Techniques.	
CO 3	Interpret the given Engineering problem using the suitable Numerical Technique.	
CO 4	Develop the computer programming based on the Numerical Techniques.	
Semster : IV		
Course Name		**Mechanical Engineering Lab-II**
Course Code		**BTMCL406**
Course Outcome No	**Course Outcome Statement**	**By the end of the course, students will be able to:**
CO 1	Illustrate center lathe and its operations including plain, taper turning, work holding devices, and cutting tools.	
CO 2	Define basic terminology of kinematics of mechanisms.	
CO 3	Construct kinematic analysis of slider crank mechanism using Klein’s construction and analytical approach.	
CO 4	Analyze the stresses and strain energy in different load cases.	
CO 5	Determine slope and deflection at a point on cantilever /simply supported beam using double integration, Macaulay’s, area-moment, and superposition methods.	
Semster : V		
Course Name		**Heat Transfer**
Course Code		**BTMEC501**
Course Outcome No	**Course Outcome Statement**	**By the end of the course, students will be able to:**
CO 1	Explain the laws of heat transfer and deduce the general heat conduction equation and to explain it for 1-D steady state heat transfer in regular shape bodies	
CO 2	Describe the critical radius of insulation, overall heat transfer coefficient, thermal conductivity and lumped heat transfer.	
CO 3	Illustrate the boundary layer concept, dimensional analysis, forced and free convection under different conditions.	
CO 4	Describe the Boiling heat transfer, mass transfer and evaluate the heat exchanger and examine the LMTD and NTU methods applied to engineering problems.	

CO 5	Explain the thermal radiation black body, emissivity and reflectivity and evaluation of view factor and radiation shields	
Semster : V		
Course Name		**Machine Design-I**
Course Code		**BTMEC503**
Course Outcome No	**Course Outcome Statement**	**By the end of the course, students will be able to:**
CO 1	Formulate the problem by identifying customer need and convert into design Specification	
CO 2	Understand component behavior subjected to loads and identify failure criteria	
CO 3	Design of machine component using theories of failures	
CO 4	Design of component for finite life and infinite life when subjected to fluctuating load	
CO 5	Design of components like shaft, key, coupling, screw and spring	
Semster : V		
Course Name		**Theory of Machines-II**
Course Code		**BTMEC504**
Course Outcome No	**Course Outcome Statement**	**By the end of the course, students will be able to:**
CO 1	identify and select type of belt and rope drive for a particular application.	
CO 2	evaluate gear tooth geometry.	
CO 3	select appropriate gears & gear trains for a particular application.	
CO 4	suggest an appropriate governor and characterize flywheels as per engine requirement.	
CO 5	illustrate the gyroscopic effects in ships, aeroplanes, and road vehicles.	
Semster : V		
Course Name		**Applied Thermodynamics-I**
Course Code		**BTMEC502**
Course Outcome No	**Course Outcome Statement**	**By the end of the course, students will be able to:**
CO 1	Define the terms like calorific value of fuel, stoichiometric air-fuel ratio, excess air, equivalent evaporation, boiler efficiency, etc. Calculate minimum air required for combustion of fuel.	
CO 2	Discuss and conclude gas power cycles and vapour power cycles like Otto, Diesel, dual, Joule and Rankine cycles and derive expressions for the performance parameters like thermal efficiency.	
CO 3	Classify various types of boiler, nozzle, steam turbine and condenser used in steam power plant.Classify various types of IC engines. Sketch the cut section of typical diesel engine and label its components.	
CO 4	Sketch P-V diagram for single-stage reciprocating air compressor, with and without clearance volume, and evaluate its performance. Differentiate between reciprocating and rotary air compressors.	
Semster : V		
Course Name		**Metrology & Quality Control**
Course Code		**BTMEC505**
Course Outcome No	**Course Outcome Statement**	**By the end of the course, students will be able to:**

CO 1	Identify methods and devices for measurement of length, angle, and gear and thread parameters, surface roughness and geometric features of parts	
CO 2	Choose limits for plug and ring gauges.	
CO 3	Explain methods of measurement in modern machineries	
CO 4	Select quality control techniques and its applications	
CO 5	Plot quality control charts and suggest measures to improve the quality of product andreduce cost using Statistical tools.	
Semster : V		
Course Name	**Product Design Engineering-II**	
Course Code	**BTID506**	
Course Outcome No	**Course Outcome Statement**	**By the end of the course, students will be able to:**
CO 1	Create prototypes.	
CO 2	Discuss various principles and technologies used for the preparation of prototype.	
CO 3	Examine the prototypes.	
CO 4	Summarize the product life cycle management.	
CO 5	Use structural approach to concept generation, selection and testing.	
Semster : V		
Course Name	**Automobile Engineering**	
Course Code	**BTMEC506A**	
Course Outcome No	**Course Outcome Statement**	**By the end of the course, students will be able to:**
CO 1	Identify and Explain the working of the different parts of the automobile.	
CO 2	Demonstrate various types of drive systems.	
CO 3	Apply vehicle troubleshooting and maintenance procedures.	
CO 4	Analyze the environmental implications of automobile emissions and suggest suitable regulatory modifications.	
CO 5	Evaluate future developments in the automobile technology.	
Semster : V		
Course Name	**Heat Transfer Lab**	
Course Code	**BTMEL507**	
Course Outcome No	**Course Outcome Statement**	**By the end of the course, students will be able to:**
CO 1	Interpret the various heat transfer mode of heat transfer and its application and verify	
CO 2	Utilize the experimental methodology	
CO 3	Explain the concept of terms like least count, calibration of the instruments	
Semster : V		
Course Name	**Applied Thermodynamics Lab**	
Course Code	**BTMEL508**	

Course Outcome No	Course Outcome Statement	By the end of the course, students will be able to:
CO 1	Demostrate test on Refrigeration and air conditioning test units to study their performance.	
CO 2	Sketch performance curves of these machines/systems.	
CO 3	Analyse the results obtained from the tests	
CO 4	Conclude the results of the experiments.	
Semster : V		
Course Name	**Machine Design Practice-I**	
Course Code	**BTMEL509**	
Course Outcome No	**Course Outcome Statement**	**By the end of the course, students will be able to:**
CO 1	Determine suitable material and size for structural component of machine/system.	
CO 2	Apply design process to an open ended problems	
CO 3	Apply iterative technique in design including making estimate of unknown values for first computation and checking or revisiting and re-computing.	
CO 4	Design of components for given part/system i.e shaft, keys, coupling, links, screws, springs etc.	
Semster : V		
Course Name	**Theory of Machines-II Lab**	
Course Code	**BTMEL510**	
Course Outcome No	**Course Outcome Statement**	**By the end of the course, students will be able to:**
CO 1	identify and select type of belt and rope drive for a particular application.	
CO 2	evaluate gear tooth geometry.	
CO 3	select appropriate gears & gear trains for a particular application.	
CO 4	suggest an appropriate governor and characterize flywheels as per engine requirement.	
CO 5	illustrate the gyroscopic effects in ships, aeroplanes, and road vehicles.	
Semster : VI		
Course Name	**Manufacturing Process-II**	
Course Code	**BTMEC601**	
Course Outcome No	**Course Outcome Statement**	**By the end of the course, students will be able to:**
CO 1	illustrate the process of powder metallurgy and its applications.	
CO 2	calculate the cutting forces in orthogonal and oblique cutting.	
CO 3	evaluate the machinability of materials.	
CO 4	study various abrasive processes.	
CO 5	explain the different precision machining processes.	

Semster : VI		
Course Name		**Machine Design-II**
Course Code		**BTMEC602**
Course Outcome No	**Course Outcome Statement**	**By the end of the course, students will be able to:**
CO 1	Define function of bearing and classify bearings andUnderstanding failure of bearing and their influence on its selection.	
CO 2	Classify the friction clutches and brakes and decide the torque capacity and friction disk parameter.	
CO 3	Discuss & use materials and configuration for machine element like gears, belts and chain.	
CO 4	Design of elements like gears, belts and chain for given power ratingalso Design thickness of pressure vessel using thick and thin criteria.	
Semster : VI		
Course Name		**Applied Thermodynamics-II**
Course Code		**BTMEC603**
Course Outcome No	**Course Outcome Statement**	**By the end of the course, students will be able to:**
CO 1	Discuss the working principles of IC Engine.	
CO 2	Intrepret the combustion process occurred in IC engine.	
CO 3	Summarize with concepts of thermodynamics Cycles used in various power plants and gas turbines.	
CO 4	Make use of knowledge on working principle of Air conditioning,refrigeration,nozzles and turbines.	
Semster : VI		
Course Name		**IC Engine**
Course Code		**BTMEC604B**
Course Outcome No	**Course Outcome Statement**	**By the end of the course, students will be able to:**
CO 1	Explain various types of I.C. Engines and Cycles of operation.	
CO 2	Explain normal and abnormal combustion phenomena in SI and CI engines.	
CO 3	Explain the Various Engine Systems like Starting, fuel supply, engine cooling, ignition system, engine lubrication systems, and governing systems.	
CO 4	Evaluate performance analysis of IC Engine and Justify the suitability of IC Engine for different applications, relate the effects of emission formation of IC engines	
CO 5	Illustrate the traditional and non-conventional fuels for internal combustion engines, as well as the layout and vehicle dynamics of electric and hybrid vehicles.	
Semster : VI		
Course Name		**Renewable energy Sources**
Course Code		**BTMEC605C**
Course Outcome No	**Course Outcome Statement**	**By the end of the course, students will be able to:**
CO 1	Distingush between renewable and non-renewable energy	
CO 2	Explain working of solar collectors	

CO 3	Illustrate various applications of solar energy	
CO 4	Explain working of other renewable energies such as wind, biomass	
Semster : VI		
Course Name	**Human Resources & Management**	
Course Code	**BTMEC606C**	
Course Outcome No	**Course Outcome Statement**	**By the end of the course, students will be able to:**
CO 1	Describe trends in the labor force composition and how they impact human resource management practice.	
CO 2	Discuss how to strategically plan for the human resources needed to meet organizational goals and objectives.	
CO 3	Compare and contrast methods used for selection and placement of human resources.	
CO 4	Summarize the activities involved in evaluating and managing employee performance.	
CO 5	Identify and explain the issues involved in establishing compensation systems.	
Semster : VI		
Course Name	**Metrology & Quality Control Lab**	
Course Code	**BTMEL607**	
Course Outcome No	**Course Outcome Statement**	**By the end of the course, students will be able to:**
CO 1	Identify methods and devices for measurement of length, angle, and gear and thread parameters, surface roughness and geometric features of parts	
CO 2	Explain methods of measurement in modern machineries	
CO 3	Select quality control techniques and its applications	
CO 4	Plot quality control charts and suggest measures to improve the quality of product andreduce cost using Statistical tools.	
Semster : VI		
Course Name	**Machine Design Practice-II**	
Course Code	**BTMEL608**	
Course Outcome No	**Course Outcome Statement**	**By the end of the course, students will be able to:**
CO 1	Use design process to an open ended problems.	
CO 2	Choose suitable material and size for structural component of machine/system.	
CO 3	Apply iterative technique in design including making estimate of unknown values for first computation and checking or revisiting and re-computing.	
CO 4	Design of components for given part/system i.e shaft, keys, coupling, links, screws, springs etc.	
Semster : VI		
Course Name	**IC Engine Lab**	
Course Code	**BTMEL609**	
Course Outcome No	**Course Outcome Statement**	**By the end of the course, students will be able to:**

CO 1	Illustrate the practical operation of 2-stroke and 4-stroke I.C engines using a valve timing diagram.
CO 2	Demonstrate the performance of IC Engines, draw performance curves of these machines/systems.
CO 3	Interpret the various engine systems like starting, fuel supply, engine cooling, ignition system etc.
CO 4	Outline conclusions based on the results of the experiments, and Analyse the results obtained from the tests.
CO 5	Estimate the constituents of combustion products for emission characteristics related to public safety.

Semster : VI		
Course Name		**Refrigeration & Air connditioning Lab**
Course Code		**BTMEL610**
Course Outcome No	**Course Outcome Statement**	**By the end of the course, students will be able to:**
CO 1	Demostrate test on Refrigeration and air conditioning test units to study their performance.	
CO 2	Sketch performance curves of these machines/systems.	
CO 3	Analyse the results obtained from the tests	
CO 4	Conclude the results of the experiments.	

Semster : VI		
Course Name		**Technical Project for Community Services**
Course Code		**BTMEM611**
Course Outcome No	**Course Outcome Statement**	**By the end of the course, students will be able to:**
CO 1	Find the problems of the community. by visiting nearby places.	
CO 2	Select one of the problems for the study, state the exact title of the project and define scope of the problem & explain the motivation, objectives and scope of the project	
CO 3	Evaluate possible solutions of the problem.	
CO 4	Design, produce, test and analyze the performance of product/system/process.	

Semster : VII		
Course Name		**Mechatronics**
Course Code		**BTMEC701**
Course Outcome No	**Course Outcome Statement**	**By the end of the course, students will be able to:**
CO 1	Define sensors and transducers and their applications	
CO 2	Explain the signal conditioning and data representation techniques	
CO 3	Construct pneumatic and hydraulic circuits for a given applications	
CO4	Analyse application of microrocessor and micro controller	
CO5	Determine PI, PD and PID controllers for a given application	

semester:VII		
Course Name		**CAD/CAM**
Course Code		**BTMEC702**

Course Outcome No	Course Outcome Statement	By the end of the course, students will be able to:
CO 1	List and describe the various input and output devices for a CAD work station.	
CO 2	Discuss the 2-D and 3-D transformation positions (Solve problems on 2-D and 3-D transformations) & Describe various CAD modeling techniques with their relative advantages and limitations.	
CO 3	Illustrate the basic Finite Element procedure & Explain various components of a typical FMS system, Robotics, and CIM.	
CO 4	Define and differentiate the CAPP systems.	
Semster : VII		
Course Name	**Manufacturing Process-III**	
Course Code	**BTMEC703**	
Course Outcome No	**Course Outcome Statement**	**By the end of the course, students will be able to:**
CO 1	differentiate clearly between NC and CNC machines.	
CO 2	prepare and execute a part program for producing a given product.	
CO 3	select appropriate non-traditional machining process for a given application.	
CO 4	compare different surface coating techniques.	
CO 5	explain different rapid prototyping techniques & Illustrate the working principle of various micro-manufacturing processes.	
Semster : VII		
Course Name	**Industrial Engineering and Management**	
Course Code	**BTMEC704B**	
Course Outcome No	**Course Outcome Statement**	**By the end of the course, students will be able to:**
CO 1	Relate the fundamental knowledge and skill sets required in the Industrial Management and Engineering profession.	
CO 2	Build ability to adopt a system approach to design, develop, implement and innovte integrated systems that include people, materials, information, equipment and energy.	
CO 3	Interpret the interactions between engineering, businesses, technological and environmental spheres in the modern society.	
CO 4	Decide their role as engineers and their impact to society at the national and global context.	
Semster : VII		
Course Name	**Knowledge Management**	
Course Code	**BTMEC705D**	
Course Outcome No	**Course Outcome Statement**	**By the end of the course, students will be able to:**
CO 1	Define KM, learning organizations, intellectual capital, and related terminologies in clear terms and understand the role of knowledge management in organizations.	
CO 2	Demonstrate concepts, and antecedents of management of knowledge and describe several successful knowledge management systems.	
CO 3	Select tools and techniques of KM for the stages of creation, acquisition, transfer, and management of knowledge. also, evaluate tangible and intangible knowledge assets and understand current KM issues and initiatives.	
CO 4	Evaluate the impact of technology including telecommunications, networks, and internet/intranet role in managing knowledge.	
CO 5	Identify KM in specific environments: managerial and decision making communities, finance and economic sectors, legal information systems, health information systems.	

Semster : VII		
Course Name		**Manufacturing Process-II Lab**
Course Code		**BTMEL706**
Course Outcome No	**Course Outcome Statement**	**By the end of the course, students will be able to:**
CO 1	illustrate the process of powder metallurgy and its applications.	
CO 2	calculate the cutting forces in orthogonal and oblique cutting.	
CO 3	evaluate the machinability of materials.	
CO 4	study various abrasive processes.	
CO 5	explain the different precision machining processes.	
Semster : VII		
Course Name		**Mechatronics Lab**
Course Code		**BTMEL707**
Course Outcome No	**Course Outcome Statement**	**By the end of the course, students will be able to:**
CO 1	Define the key elements of mechatronics system.	
CO 2	Explain the characteristics of the temperature sensor.	
CO 3	Interpret the Characteristics of LVDT.	
CO 4	Create a logic gate using PLC.	
CO5	Illustrate the working principle of Burdon tube pressure gauge	
CO 6	Demostrate the hydraulics system with its principle	
Semster : VII		
Course Name		**CAD/CAM LAb**
Course Code		**BTMEL708**
Course Outcome No	**Course Outcome Statement**	**By the end of the course, students will be able to:**
CO 1	Construct CAD part models, assembly model and drafting of machine elements using CAD software.	
CO 2	Evaluate stresses in components subjected to simple structural loading using FE software	
CO 3	Summarize and use NC programs for turning and milling	
CO 4	discuss case study of industrial robots	
Semster : VII		
Course Name		**Seminar**
Course Code		**BTMES709**
Course Outcome No	**Course Outcome Statement**	**By the end of the course, students will be able to:**

CO 1	Model the exact title of the seminar.	
CO 2	Explain the motivation for selecting the seminar topic and its scope.	
CO 3	Survey pertinent literature and information on the topic.	
CO 4	Critically review the literature and information collected.	
CO 5	Demonstrate effective written and verbal communication.	
Semster : VII		
Course Name		**Project stage-I**
Course Code		**BTMEP711**
Course Outcome No	**Course Outcome Statement**	**By the end of the course, students will be able to:**
CO 1	Evaluate the state of the field.	
CO 2	Analyse a problem and evaluate the potential of a solution or experiment.	
CO 3	Synthesise the progress and outputs of your project through professional engineering reports and presentations to a range of audiences including the community and industry.	
CO 4	Formulate research and technical outputs by applying appropriate techniques, resources and modern engineering tools to a complex open-ended engineering problem.	
Semster : VIII		
Course Name		**Fundamental of Automotive System**
Course Code		**BTMEC801A**
Course Outcome No	**Course Outcome Statement**	**By the end of the course, students will be able to:**
CO 1	Adapt fundamental knowledge of the various systems of an automobile.	
CO 2	Relate the functions of each system with its design and layout.	
CO 3	Demonstrate the various systems using simple schematics.	
CO 4	Apply concepts and to tetermine mathematical models of various automotive systems.	
Semster : VIII		
Course Name		**Non Conventional Energy Resources**
Course Code		**BTMEC801F**
Course Outcome No	**Course Outcome Statement**	**By the end of the course, students will be able to:**
CO 1	Demonstrate the generation of electricity from various Non-Conventional sources of energy, have a working knowledge on types of fuel cells.	
CO 2	Estimate the solar energy, Utilization of it, Principles involved in solar energy collection and conversion of it to electricity generation.	
CO 3	Explain the concepts involved in wind energy conversion system by studying its components, types and performance.	
CO 4	Illustrate ocean energy and explain the operational methods of their utilization.	
Semster : VIII		
Course Name		**Project Stage-II**
Course Code		**BTMEP803**

Course Outcome No	Course Outcome Statement	By the end of the course, students will be able to:
CO 1	Discuss the aim and objectives for this stage of the project.	
CO 2	Construct and demostrate the tests on the system/product .	
CO 3	Analyze the results of the tests.	
CO 4	Discuss the findings, draw conclusions, and modify the system/product, if necessary.	