Shree Santkrupa Institute of Engineering and Technology

Department of Mechanical Engineering

Academic Year: 2018-19

Semester: III

Sr. No.	Course Code	Course Name	Lecture	Tutorial	Practical	Credit
1	BTMEC303	Fluid Mechanics	3	1		4
2	BTMES302	Material Science and Metallurgy	3	1		4
3	BTMEC305	Thermodynamics	3	1		4
4	BTMEC304	Machine Drawing & CAD	2			2
5	BTBSC301	Engineering Mathematics -III	3	1		4
6	BTHM3401	Basic Human Rights	2			Audit
7	BTMEL307	Material Science and Metallurgy Lab			2	1
8	BTMEL308	Fluid Mechanics Lab			2	1
9	BTMEL309	Machine Drawing & CAD Lab			4	2
10	BTMEF310	Industrial Training-I				1

Semester: IV

Sr. No.	Course Code	Course Name	Lecture	Tutorial	Practical	Credit
1	BTMEC401	Manufacturing Process-I	2	1		3
2	BTMEC402	Theory of Machine-I	3	1		4
3	BTMEC403	Strength of Materials	3	1		4
4	BTMEC404	Numerical Methods in Mechanical Engineering	2	1		3
5	BTMID405	Product Design Engineering	2			2
6	BTHM3402	Inter Personal Communication Skills and Self Development	3			3
7	BTMEL407	Manufacturing Process Lab-I	2			1
8	BTMEL408	Theory of Machine Lab-I	2			1
9	BTMEL409	Strength of Materials Lab	2			1
10	BTMEL410	Numerical Method Lab	2			1

Course Outcomes

Semster : III		
Course Name	**Engineering Mathematics – III**	
Course Code	**BTBSC301**	
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	**Material Science and Metallurgy**	
Course Code	**BTMES302**	
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	**Thermodynamics**	
Course Code	**BTMEC305**	
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 plane.	
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	**Machine Drawing & CAD**	
Course Code	**BTMEC304**	
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

Course Name	Fluid Mechanics	
Course Code	BTMEC303	
Course Outcome No	Course Outcome Statement	By the end of the course, students will be able to:
CO 1	Dfine fluid and various properties of fluid.	
CO 2	Determine hydrostatic forces on the plane and curved surfaces and explain stability of floating bodies.	
CO 3	Explain several types of flow and determine the acceleration of fluid particles.	
CO 4	Apply Bernoulli's equation and Navier-Stokes equation to simple problems in fluid mechanics.	
CO 5	Explain and solve simple problems related to the use of dimensional analysis, boundary layer theory, drag and lift force.	

Semster : III		
Course Name	Fluid Mechanics Lab	
Course Code	BTMEL308	
Course Outcome No	Course Outcome Statement	By the end of the course, students will be able to:
CO 1	Utilize manometers for pressure measurement, Explain laminar and Turbulent flow.	
CO 2	Apply Bernoulli's theorem, determine the metacentric height of the floating body.	
CO 3	Determine pressure drop in flow through pipes, pipe fittings, and critical Reynolds number using Reynolds apparatus.	
CO 4	Interpret momentum equation using impact of jet apparatus.	
CO 5	Determine viscosity using viscometer.	

Semster : III		
Course Name	Material Science and Metallurgy Lab	
Course Code	BTMEL307	
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	Basic Human Rights	
Course Code	BTHM3401	

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 humans.
CO 5		Aware of their responsibilities towards the nation.

Semster : III		
Course Name	Machine Drawing & CAD Lab	
Course Code	BTMEL309	

Course Outcome No	Course Outcome Statement	By the end of the course, students will be able to:
CO 1		Illustrate conventional representation of standard machine components, welds, materials etc.
CO 2		Develop sectional view of a given machine component
CO 3		Develop Assemble view from details of given component i.e. valve, pump, machine tool part, etc.
CO 4		Build a assembled view by combining details of given machine component and
CO 5		Make use of various Auto-Cad commands to draw orthographic projection and sectional view from pictorial view of given machine

Semster : IV		
Course Name	Manufacturing Process-I	
Course Code	BTMEC401	

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	BTMEC402	

Course Outcome No	Course Outcome Statement	By the end of the course, students will be able to:
CO 1		Define basic terminology of kinematics of mechanisms.
CO 2		Classify planar mechanisms and calculate its degree of freedom.
CO 3		Perform kinematic analysis of a given mechanism using ICR and RV methods.

CO 4	Perform kinematic analysis of a given mechanism analytically using vector or complex algebra method.
CO 5	Perform kinematic analysis of slider crank mechanism using Klein's construction and analytical approach.

Semster : IV	
Course Name	Strength of Materials
Course Code	BTMEC403
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, max. Shear stress, their planes, and max.
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	Numerical Methods in Mechanical Engineering
Course Code	BTMEC404
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	Product Design Engineering
Course Code	BTMID405
Course Outcome No / Course Outcome Statement	By the end of the course, students will be able to:
CO 1	Create simple mechanical designs.
CO 2	Create design documents for knowledge sharing.
CO 3	Illustrate own work to meet design requirements.
CO 4	Discuss various ways for effective work with colleagues.

Semster : IV	
Course Name	Inter Personal Communication Skills and Self Development
Course Code	BTHM3402
Course Outcome No / Course Outcome Statement	By the end of the course, students will be able to:
CO 1	Demonstrates the skills to manage and express their emotions, thoughts, impulses and stress in effective ways.

CO 2	Apply various time management techniques in productive manner.
CO 3	Build performance, enhanced wellbeing, personal growth, or a sense of purpose.
CO 4	Develop interpersonal communication skills to establish and enhance personal and work-based relationships.
CO 5	Design an effective Presentation and speak with greater control in front of others.

Semster : IV		
Course Name	**Manufacturing Process-I Lab**	
Course Code	**BTMEL407**	
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 Lab-I**	
Course Code	**BTMEL408**	
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	Demonstrate use of graphical differentiation method for kinematic analysis of slider crank mechanism or any other planar mechanism with a slider	
CO 4	Sketch polar diagram for a Hooke's joint.	

Semster : IV		
Course Name	**Strength of Materials Lab**	
Course Code	**BTMEL409**	
Course Outcome No	**Course Outcome Statement**	**By the end of the course, students will be able to:**
CO 1	Analyze the tensile and compressive strength of a specimen for applying in apractical design based project work.	
CO 2	Determine the impact strength, fatigue strength to analyze the application of a specific material for a given design requirements for different loading conditions of structures or machines	
CO 3	Analyze given beam for calculations of SF and BM, Explain the use of C- Programming in the strength of materials.	
CO 4	Evaluate the capacity of a material to withstand torsional stresses for a safe and sustainable design of machine elements.	
CO 5	Determine principal stresses, max. Shear stress, their planes and max. Normal and shear stresses on a given plane by analytical and Mohers circle method	

Semster : IV	
Course Name	**BTMEL410**
Course Code	**Numerical Method Lab**

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.