

**ACADEMIC YEAR 2021-2022**

**DEPARTMENT OF MECHANICAL ENGINEERING**

**S3 ME (2020-2024 Batch)**

<b>Sl no</b>	<b>Course code</b>	<b>Subject name</b>	<b>Staff handled</b>
1	MAT201	PARTIAL DIFFERENTIAL EQUATION AND COMPLEX ANALYSIS	Mrs. Lijimol
2	MET201	MECHANICS OF SOLIDS	Mr. Rantheesh J
3	MET203	MECHANICS OF FLUIDS	Mr. Yadhukrishnan
4	MET205	METALLURGY & MATERIAL SCIENCE	Mr. Subin B Markose
5	MCN201	SUSTAINABLE ENGINEERING	Mr. Rahul N R
6	HUT200	PROFESSIONAL ETHICS	Mr. Sivan S Kumar
7	MEL201	COMPUTER AIDED MACHINE DRAWING	Mr. Sangeeth S Kumar
8	MEL203	MATERIALS TESTING LAB	Mr. Ajay J

**S5 ME (2019-23 Batch)**

<b>Sl no</b>	<b>Course code</b>	<b>Subject name</b>	<b>Staff handled</b>
1	MET301	MECHANICS OF MACHINERY	Mr. Sangeeth S Kumar
2	MET303	THERMAL ENGINEERING	Mr. Arun Kumar G
3	MET305	INDUSTRIAL & SYSTEMS ENGINEERING	Mr. John P George
4	MET307	MACHINE TOOLS AND METROLOGY	Mr. Rahul N R
5	MCN301	DISASTER MANAGEMENT	Mr. Subin B Markose
6	HUT300	INDUSTRIAL ECONOMICS & FOREIGN TRADE	Mrs. Geetha Vimal
7	MEL331	MACHINE TOOLS LAB II	Mr. Subin B Markose
8	MEL333	THERMAL ENGINEERING LAB 1	Mr. Arun Kumar G

**S7 ME (2018-22 Batch 2015 Scheme)**

<b>Sl no</b>	<b>Course code</b>	<b>Subject name</b>	<b>Staff handled</b>
1	ME401	DESIGN OF MACHINE ELEMENTS 1	Dr. N Manikanda Prabu
2	ME403	ADVANCED ENERGY ENGINEERING	Mr. Yadhukrishnan
3	ME405	REFRIGERATION AND AIR CONDITIONING	Mr. Rantheesh J
4	ME407	MECHATRONICS	Mr. Arun Kumar G
5	ME409	COMPRESSIBLE FLUID FLOW	Ms. Arya P Mohan
6	ME463	AUTOMOBILE ENGINEERING	Mr. Athul M V
7	ME 431	MECHANICAL ENGINEERING LAB	Mr. Arun Kumar G
8	ME451	SEMINAR AND PROJECT PRILIMINARY	Mr. Yadhukrishnan

**EVEN SEMESTER****S4 ME (2020-2024 Batch)**

<b>Sl no</b>	<b>Course code</b>	<b>Subject name</b>	<b>Staff Handled</b>
1	MAT204	PROBABILITY, RANDOM PROCESS AND NUMERICAL METHODS	Mr. Ampady V K
2	MET202	ENGINEERING THERMODYNAMICS	Mr. Arun Kumar G
3	MET204	MANUFACTURING PROCESS	Mr. Roshith P
4	MET206	FLUID MACHINERY	Mr. Subin B Markose
5	EST 200	DESIGN AND ENGINEERING	Mr. Ajay J
6	MCN202	CONSTITUTION OF INDIA	Mr. Kevin Sebastan
7	MEL202	MEL202 FM & HM LAB	Mr. Subin B Markose
8	MEL 204	MACHINE TOOLS LAB- I	Mr. Sivan S Kumar

**S6 ME (2019-2023 Batch)**

<b>Sl no</b>	<b>Course code</b>	<b>Subject name</b>	<b>Staff handled</b>
1	MET302	HEAT & MASS TRANSFER	Dr. N Manikanda Prabu
2	MET304	DYNAMICS AND DESIGN OF MACHINERY	Mr. Subin B Markose
3	MET306	ADVANCED MANUFACTURING ENGINEERING	Mr. Sivan S Kumar
4	MET308	COMPREHENSIVE COURSE WORK	Mr. Roshith P
5	HUT310	MANAGEMENT FOR ENGINEERS	Mrs. Sony Sethukumar

6	MET 312	NON DESTRUCTIVE TESTING	Mrs. Arya P Mohan
7	MEL332	COMPUTER AIDED DESIGN & ANALYSIS LAB	Mr. Sangeeth S Kumar
8	MEL334	THERMAL ENGINEERING LAB-II	Mr. Arun Kumar G

**S8 ME (2018-2022 Batch 2015 Scheme)**

Sl no	Course code	Subject name	Staff Handled
1	ME 402	DESIGN OF MACHINE ELEMENTS 2	Mr. Sangeeth S Kumar
2	ME 404	INDUSTRIAL ENGINEERING	Mr. Subin B Markose
3	ME 476	MATERIAL HANDLING & FACILITIES PLANNING	Mr. Arun Kumar G
4	CE 482	ENVIRONMENTAL IMPACT ASSESSMENT	Mr. Sivan S Kumar
5	ME 492	PROJECT	Mr. Yadhukrishnan

**ODD SEMESTER**

**S3 ME (2020-2024 Batch)**

Sl no	Course code	Subject name	Staff handled
1	MAT201	PARTIAL DIFFERENTIAL EQUATION AND COMPLEX ANALYSIS	Mrs. Lijimol
2	MET201	MECHANICS OF SOLIDS	Mr. Rantheesh J
3	MET203	MECHANICS OF FLUIDS	Mr. Yadhukrishnan
4	MET205	METALLURGY & MATERIAL SCIENCE	Mr. Subin B Markose
5	MCN201	SUSTAINABLE ENGINEERING	Mr. Rahul N R
6	HUT200	PROFESSIONAL ETHICS	Mr. Sivan S Kumar
7	MEL201	COMPUTER AIDED MACHINE DRAWING	Mr. Sangeeth S Kumar
8	MEL203	MATERIALS TESTING LAB	Mr. Ajay J

**COURSE OUTCOMES FOR:**

**MAT201 PARTIAL DIFFERENTIAL EQUATIONS AND COMPLEX ANALYSIS**

Sl. No.	Subject Learning Outcomes or Course Outcomes
	On completion of course the students will be able to:
1	Understand the concept and the solution of partial differential equation.
2	Analyse and solve one dimensional wave equation and heat equation.
3	Understand complex functions, its continuity differentiability with the use of Cauchy Riemann equations.
4	Evaluate complex integrals using Cauchy's integral theorem and Cauchy's integral formula, understand the series expansion of analytic function.
5	Understand the series expansion of complex function about a singularity and Apply residue theorem to compute several kinds of real integrals.

**COURSE OUTCOMES FOR:**

**MET201 MECHANICS OF SOLIDS**

Sl. No.	Subject Learning Outcomes or Course Outcomes
	On completion of course the students will be able to:
1	Determine the stresses, strains and displacements of structures by tensorial and graphical (Mohr's circle) approaches
2	Analyse the strength of materials using stress-strain relationships for structural and thermal loading.
3	Perform basic design of shafts subjected to torsional loading and analyse beams subjected to bending moments.
4	Determine the deformation of structures subjected to various loading conditions using strain energy methods.
5	Analyse column buckling and appreciate the theories of failures and its relevance in engineering design.

**COURSE OUTCOMES FOR:**

**MET203 MECHANICS OF FLUIDS**

Sl. No.	Subject Learning Outcomes or Course Outcomes
	On completion of course the students will be able to:
1	Define Properties of Fluids and Solve hydrostatic problems.
2	Explain fluid kinematics and Classify fluid flows.
3	Interpret Euler and Navier-Stokes equations and Solve problems using Bernoulli's Equation.
4	Evaluate energy losses in pipes and sketch energy gradient lines.

5	Explain the concept of boundary layer and its applications.
6	Use dimensional Analysis for model studies.

**COURSE OUTCOMES FOR:**

**MET205 METALLURGY & MATERIAL SCIENCE**

Sl. No.	Subject Learning Outcomes or Course Outcomes
	<b>On completion of course the students will be able to:</b>
1	Understand the basic chemical bonds, crystal structures (BCC, FCC, and HCP), and their relationship with the properties.
2	Analyze the microstructure of metallic materials using phase diagrams and modify the microstructure and properties using different heat treatments.
3	How to quantify mechanical integrity and failure in materials.
4	Apply the basic principles of ferrous and non-ferrous metallurgy for selecting materials for specific applications.
5	Define and differentiate engineering materials on the basis of structure and properties for engineering applications.

**COURSE OUTCOMES FOR:**

**MCN201 SUSTAINABLE ENGINEERING**

Sl. No.	Subject Learning Outcomes or Course Outcomes
	<b>On completion of course the students will be able to:</b>
1	Understand the relevance and the concept of sustainability and the global initiatives in this direction.
2	Explain the different types of environmental pollution problems and their sustainable solutions.
3	Discuss the environmental regulations and standards.
4	Outline the concepts related to conventional and non-conventional energy.
5	Demonstrate the broad perspective of sustainable practices by utilizing engineering knowledge and principles.

**COURSE OUTCOMES FOR:**

**HUT200 PROFESSIONAL ETHICS**

Sl. No.	Subject Learning Outcomes or Course Outcomes
	<b>On completion of course the students will be able to:</b>
1	Understand the core values that shape the ethical behaviour of a professional.
2	Adopt a good character and follow an ethical life.
3	Explain the role and responsibility in technological development by keeping personal

	ethics and legal ethics.
4	Solve moral and ethical problems through exploration and assessment by established experiments.
5	Apply the knowledge of human values and social values to contemporary ethical values and global issues.

**COURSE OUTCOMES FOR:**

**MEL201 COMPUTER AIDED MACHINE DRAWING**

Sl. No.	Subject Learning Outcomes or Course Outcomes
	<b>On completion of course the students will be able to:</b>
1	Apply the knowledge of engineering drawings and standards to prepare standard dimensioned drawings of machine parts and other engineering components.
2	Prepare standard assembly drawings of machine components and valves using part drawings and bill of materials.
3	Apply limits and tolerances to components and choose appropriate fits for given assemblies.
4	Interpret the symbols of welded, machining and surface roughness on the component drawings.
5	Prepare part and assembly drawings and Bill of Materials of machine components and valves using CAD software.

**COURSE OUTCOMES FOR:**

**MEL203 MATERIALS TESTING LAB**

Sl. No.	Subject Learning Outcomes or Course Outcomes
	<b>On completion of course the students will be able to:</b>
1	To understand the basic concepts of analysis of circular shafts subjected to torsion.
2	To understand the behaviour of engineering component subjected to cyclic loading and failure concepts.
3	Evaluate the strength of ductile and brittle materials subjected to compressive, Tensile shear and bending forces.
4	Evaluate the microstructural morphology of ductile or brittle materials and its fracture modes (ductile /brittle fracture) during tension test.
5	To specify suitable material for applications in the field of design and manufacturing.

## S5 ME

### S3 ME (2019-2023 Batch)

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1	MET301	MECHANICS OF MACHINERY	Mr. Sangeeth S Kumar
2	MET303	THERMAL ENGINEERING	Mr. Arun Kumar G
3	MET305	INDUSTRIAL & SYSTEMS ENGINEERING	Mr. John P George
4	MET307	MACHINE TOOLS AND METROLOGY	Mr. Rahul N R
5	MCN301	DISASTER MANAGEMENT	Mr. Subin B Markose
6	HUT300	INDUSTRIAL ECONOMICS & FOREIGN TRADE	Mrs. Geetha Vimal
7	MEL331	MACHINE TOOLS LAB II	Mr. Subin B Markose
8	MEL333	THERMAL ENGINEERING LAB 1	Mr. Arun Kumar G

### COURSE OUTCOMES FOR:

#### MET301 MECHANICS OF MACHINERY

Sl. No.	Subject Learning Outcomes or Course Outcomes
	<b>On completion of course the students will be able to:</b>
1	Explain the fundamentals of kinematics, various planar mechanisms and interpret the basic principles of mechanisms and machines.
2	Perform analysis and synthesis of mechanisms.
3	Solve the problem on cams and gear drives, including selection depending on requirement.
4	Calculate the gyroscopic effect in various situations.
5	Analyse rotating and reciprocating masses for its unbalance.

### COURSE OUTCOMES FOR:

#### MET303 THERMAL ENGINEERING

Sl. No.	Subject Learning Outcomes or Course Outcomes
	<b>On completion of course the students will be able to:</b>
1	Explain the working of steam power cycle and related components.
2	Discuss the working of steam turbines and methods for evaluating the performance.
3	Illustrate the performance testing and evaluation of IC engines.

4	Explain the combustion phenomenon and pollution in IC engines.
5	Discuss the principles of refrigeration and air-conditioning and basic design considerations.

**COURSE OUTCOMES FOR:**

**MET305 INDUSTRIAL & SYSTEMS ENGINEERING**

Sl. No.	Subject Learning Outcomes or Course Outcomes
	<b>On completion of course the students will be able to:</b>
1	Implement various tools and techniques in industrial engineering.
2	Calculate the inventory system for a given requirement.
3	Explain the importance of industrial relations.
4	Select the lean manufacturing tools to find and eliminate wastes.
5	Identify the framework of agile manufacturing.
6	Identify core and extended modules of enterprise resource planning.

**COURSE OUTCOMES FOR:**

**MET307 MACHINE TOOLS AND METROLOGY**

Sl. No.	Subject Learning Outcomes or Course Outcomes
	<b>On completion of course the students will be able to:</b>
1	Analyze various machining process and calculate relevant quantities such as velocities, forces and powers.
2	Analyze of the tool nomenclature with surface roughness obtainable in each machining processes.
3	Understand the limitations of various machining process with regard to shape formation and surface texture.
4	Demonstrate knowledge of the underlying principles of measurement, as they relate to mechanical measurement, electronic instrumentation, and thermal effects.
5	Get an exposure to advanced measuring devices and machine tool metrology.

**COURSE OUTCOMES FOR:**

**MCN301 DISASTER MANAGEMENT**

Sl. No.	Subject Learning Outcomes or Course Outcomes
	<b>On completion of course the students will be able to:</b>
1	Define and use various terminologies in use in disaster management parlance and organise each of these terms in relation to the disaster management cycle.
2	Distinguish between different hazard types and vulnerability types and do vulnerability assessment.
3	Identify the components and describe the process of risk assessment, and apply appropriate methodologies to assess risk.



4	Explain the core elements and phases of Disaster Risk Management and develop possible measures to reduce disaster risks across sector and community.
5	Identify factors that determine the nature of disaster response and discuss the various disaster response actions.
6	Explain the various legislations and best practices for disaster management and risk reduction at national and international level.

**COURSE OUTCOMES FOR:**

**HUT300 INDUSTRIAL ECONOMICS & FOREIGN TRADE**

Sl. No.	Subject Learning Outcomes or Course Outcomes
	<b>On completion of course the students will be able to:</b>
1	Explain the problem of scarcity of resources and consumer behaviour, and to evaluate the impact of government policies on the general economic welfare.
2	Take appropriate decisions regarding volume of output and to evaluate the social cost of production.
3	Determine the functional requirement of a firm under various competitive conditions.
4	Examine the overall performance of the economy, and the regulation of economic fluctuations and its impact on various sections in the society.
5	Determine the impact of changes in global economic policies on the business opportunities of a firm.

**COURSE OUTCOMES FOR:**

**MEL331 MACHINE TOOLS LAB II**

Sl. No.	Subject Learning Outcomes or Course Outcomes
	<b>On completion of course the students will be able to:</b>
1	Apply the procedures to measure length, angles, width, depth, bore diameters, internal and external tapers, tool angles, and surface roughness by using different instruments and by different indirect methods.
2	Determine limits and fits and allocate tolerances for machine components.
3	CNC programming and to use coordinate measuring machine to record measurements of complex profiles with high sensitivity.
4	Use effective methods of measuring straightness, Squareness, flatness, roundness, profile, screw threads and gear teeth.
5	Securing knowledge of manufacturing components within the tolerance limit and surface roughness according to given drawings using various machine tools.

**COURSE OUTCOMES FOR:**

**MEL333 THERMAL ENGINEERING LAB 1**

Sl. No.	Subject Learning Outcomes or Course Outcomes
	On completion of course the students will be able to:
1	Measure thermo-physical properties of solid, liquid and gaseous fuels.
2	Identify various systems and subsystems of Diesel and petrol engines.
3	Analyse the performance characteristics of internal combustion engines.
4	Investigate the emission characteristics of exhaust gases from IC Engines.
5	Interpret the performance characteristics of air compressors / blowers.

**S7 ME**

**S7 ME (2018-2022 Batch)**

Sl no	Course code	Subject name	Staff handled
1	ME401	DESIGN OF MACHINE ELEMENTS 1	Dr. N Manikanda Prabu
2	ME403	ADVANCED ENERGY ENGINEERING	Mr. Yadhukrishnan
3	ME405	REFRIGERATION AND AIR CONDITIONING	Mr. Rantheesh J
4	ME407	MECHATRONICS	Mr. Arun Kumar G
5	ME409	COMPRESSIBLE FLUID FLOW	Ms. Arya P Mohan
6	ME463	AUTOMOBILE ENGINEERING	Mr. Athul M V
7	ME 431	MECHANICAL ENGINEERING LAB	Mr. Arun Kumar G
8	ME451	SEMINAR AND PROJECT PRILIMINARY	Mr. Yadhukrishnan

**COURSE OUTCOMES FOR:**

**ME401 DESIGN OF MACHINE ELEMENTS 1**

Sl. No.	Subject Learning Outcomes or Course Outcomes
	On completion of course the students will be able to:
1	Students will able to understand and identify the different procedures to be followed during different phases of design process and understand the basic material properties.
2	Students will understand different failure theories and basic concepts of deign factors like stress, factor of safety, etc.
3	Students will understand the basics of threaded and bolted joints. They will identify the forces acting on the joint and calculate the maximum stress in the system. They will be able to compare and evaluate the permissible stress on a material and select the material for required force. With the optimum constrains students are able to design threaded and bolts.

4	Students will understand the basics and applications of riveted, cotter, kuckle, gib and welded joints. They will be able to calculate and analyze the load on the system. According to the application, student will be able to choose the type of joint and design the system to satisfy the requirement.
5	Students will be able to classify different type of springs. They will be able to predict different effects on the spring under different loading conditions. According to application they will be able to calculate the load and analyze the deformation of the spring. By evaluating the load carrying capacity, the student can design the spring to the required system.
6	Students will be able to explain the different design consideration while designing shaft and couplings. They will be able to calculate the forces acting on the system. Students will be able to analyze and choose suitable design parameters for the system. They will be able to design couplings (shaft, keys, pins etc.) for the specified requirement.

**COURSE OUTCOMES FOR:**

**ME403 ADVANCED ENERGY ENGINEERING**

Sl. No.	Subject Learning Outcomes or Course Outcomes
	<b>On completion of course the students will be able to:</b>
1	To understand global and Indian energy scenario & compare different conventional power plants.
2	To gain knowledge about solar thermal energy systems, understand methods of its harvesting, estimate economic aspects involved and its sustainability attributes.
3	To gain knowledge about basics of wind energy; understand & analyze wind energy conversion systems; understand solar-wind hybrid systems and wind power economics
4	To gain knowledge about biomass energy and understand various biomass conversion processes, and estimate economic aspects involved and future prospects.
5	To understand the Geothermal, Tidal , Wave, MHD power generation, small scale hydro power plants, fuel cells, Hydrogen energy conversion systems, hybrid systems; estimate economic aspects involved and technical feasibility.
6	To understand Environmental impacts of energy conversion.

**COURSE OUTCOMES FOR:**

**ME405 REFRIGERATION AND AIR CONDITIONING**

Sl. No.	Subject Learning Outcomes or Course Outcomes
	<b>On completion of course the students will be able to:</b>
1	To identify and compare different type of refrigerating machines used in industries and in other establishments.
2	To analyze the influence of all operating parameters of R & AC machines & can select the

	right refrigerating equipment for a particular application.
3	To select the right refrigerant for a particular practical situation. Apply their knowledge in unconventional refrigeration methods and working principles of refrigerating and air conditioning equipment to attain sustainable refrigeration methods.
4	To select the right type of components for a particular refrigerating / air conditioning system used in practice.
5	Using the principles of air conditioning, they will be able to design different type of air conditioning systems and duct systems for industrial applications.

**COURSE OUTCOMES FOR:**

**ME407 MECHATRONICS**

Sl. No.	Subject Learning Outcomes or Course Outcomes
	<b>On completion of course the students will be able to:</b>
1	Students will understand the basic structure of Mechatronics system, sensors and encoders.
2	Students will gain knowledge on the various types of hydraulic and pneumatic actuators used. They will synergize this with their knowledge in developing simple hydraulic and pneumatic circuit's using standard symbols.
3	Students will develop an idea about Micro Electro Mechanical System, Deep Reactive Ion Etching (DRIE) and LIGA Process.
4	Students will be able to select various mechatronics elements in the Design of modern CNC machines.
5	Students will gain fundamental knowledge in system modelling and Mechatronics in Robotics.
6	Students will be able to assess case studies of mechatronic systems.

**COURSE OUTCOMES FOR:**

**ME409 COMPRESSIBLE FLUID FLOW**

Sl. No.	Subject Learning Outcomes or Course Outcomes
	<b>On completion of course the students will be able to:</b>
1	To analyze and solve compressible flow related engineering problems.
2	To evaluate the sonic speed for ideal gases and obtain the Mach numbers. Also to classify subsonic, transonic, supersonic and hypersonic flow regimes.
3	To apply the knowledge gained in performing preliminary design of supersonic inlets, diffusers, wind tunnels and other compressible flow devices by using one-dimensional compressible flow theory.
4	To combine conservation of mass, momentum and energy principles with gas equations of state and second law of thermodynamics to analyze normal shock.
5	To combine conservation of mass, momentum and energy principles with gas equations of state and second law of thermodynamics to analyze Fanno flow & Rayleigh flow.

6	To describe various compressible flow field visualization and measurement methods.
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**COURSE OUTCOMES FOR:**

**ME463 AUTOMOBILE ENGINEERING**

Sl. No.	Subject Learning Outcomes or Course Outcomes
	<b>On completion of course the students will be able to:</b>
1	Students will be able to practically identify and explain different automotive systems and subsystems.
2	Students will be able to understand the principles of transmission, suspension, steering and braking systems of an automobile.
3	Students will be able to investigate the future developments in the automobile industry.
4	Students will be able to interpret the various terminologies used in the automotive industry.
5	Students will be able to analyse the effectiveness of energy storing and dissipating systems in a vehicle.
6	Students will be able to evaluate the aerodynamic design parameters of the vehicle and can validate the same.

**COURSE OUTCOMES FOR:**

**ME 431 MECHANICAL ENGINEERING LAB**

Sl. No.	Subject Learning Outcomes or Course Outcomes
	<b>On completion of course the students will be able to:</b>
1	Ability to apply the principle of heat transfer for quantitative measurement and to compare the results with theoretical values.
2	Ability to compute natural frequency of simple vibrating systems.
3	Understand the working of different governors, and can predict the stability of mechanical governors.
4	Understand the theory behind gyroscopic effect and to predict the effect of gyroscopic couple in different mechanisms.
5	To practice calibration of thermometer and pressure gauges

**COURSE OUTCOMES FOR:**

**ME451 SEMINAR AND PROJECT PRILIMINARY**

Sl. No.	Subject Learning Outcomes or Course Outcomes
	<b>On completion of course the students will be able to:</b>

1	The students will be able to explore the recent technological advancements correlating the fundamentals of mechanical engineering.
2	The students will be able to identify, define and formulate engineering problems through detailed literature survey.
3	The students will develop presentation skills with the ability to communicate to audience and also ethical writing skills as a part of report submission.
4	The students will be in a position to hypothesize future advancements in their present work.

## EVEN SEMESTER

### S4 ME

#### S4 ME (2020-24 Batch)

Sl no	Course code	Subject name	Staff Handled
1	MAT204	PROBABILITY, RANDOM PROCESS AND NUMERICAL METHODS	Mr. AMPADY V K
2	MET202	ENGINEERING THERMODYNAMICS	Mr. Arun Kumar G
3	MET204	MANUFACTURING PROCESS	Mr. Roshith P
4	MET206	FLUID MACHINERY	Mr. Subin B Markose
5	EST 200	DESIGN AND ENGINEERING	Mr. Ajay J
6	MCN202	CONSTITUTION OF INDIA	Mr. Kevin Sebastan
7	MEL202	MEL202 FM & HM LAB	Mr. Subin B Markose
8	MEL 204	MACHINE TOOLS LAB- I	Mr. Sivan S Kumar

### COURSE OUTCOMES FOR:

#### MAT 204 PROBABILITY, RANDOM PROCESSES AND NUMERICAL METHODS

Sl. No.	Subject Learning Outcomes or Course Outcomes
	On completion of course the students will be able to:
1	Understand the concept, properties and important models of discrete random variables and, using them, analyse suitable random phenomena.
2	Understand the concept, properties and important models of continuous random variables and, using them, analyse suitable random phenomena.
3	Analyse random processes using autocorrelation, power spectrum and Poisson process model as appropriate.
4	Compute roots of equations, evaluate definite integrals and perform interpolation on

	given numerical data using standard numerical techniques
5	Apply standard numerical techniques for solving systems of equations, fitting curves on given numerical data and solving ordinary differential equations.

**COURSE OUTCOMES FOR:**

**MET202 ENGINEERING THERMODYNAMICS**

Sl. No.	Subject Learning Outcomes or Course Outcomes
	<b>On completion of course the students will be able to:</b>
1	Understand basic concepts and laws of thermodynamics.
2	Conduct first law analysis of open and closed systems.
3	Determine entropy and availability changes associated with different processes.
4	Understand the application and limitations of different equations of state.
5	Determine change in properties of pure substances during phase change processes.
6	Evaluate properties of ideal gas mixtures.

**COURSE OUTCOMES FOR:**

**MET204 MANUFACTURING PROCESS**

Sl. No.	Subject Learning Outcomes or Course Outcomes
	<b>On completion of course the students will be able to:</b>
1	Illustrate the basic principles of foundry practices and special casting processes, their advantages, limitations and applications.
2	Categorize welding processes according to welding principle and material.
3	Understand requirements to achieve sound welded joint while welding different similar and dissimilar engineering materials.
4	Student will estimate the working loads for pressing, forging, wire drawing etc. processes.
5	Recommend appropriate part manufacturing processes when provided a set of functional requirements and product development constraints.

**COURSE OUTCOMES FOR:**

**MET206 FLUID MACHINERY**

Sl. No.	Subject Learning Outcomes or Course Outcomes
	<b>On completion of course the students will be able to:</b>
1	Explain the characteristics of centrifugal and reciprocating pumps.

2	Calculate forces and work done by a jet on fixed or moving plate and curved plates.
3	Explain the working of turbines and Select a turbine for specific application.
4	Analyse the working of air compressors and Select the suitable one based on application.
5	Analyse gas turbines and Identify the improvements in basic gas turbine cycles.
6	Explain the characteristics of centrifugal and reciprocating pumps.

**COURSE OUTCOMES FOR:**

**EST 200 DESIGN AND ENGINEERING**

Sl. No.	Subject Learning Outcomes or Course Outcomes
	<b>On completion of course the students will be able to:</b>
1	Explain the different concepts and principles involved in design engineering.
2	Apply design thinking while learning and practicing engineering.
3	Develop innovative, reliable, sustainable and economically viable designs incorporating knowledge in engineering.

**COURSE OUTCOMES FOR:**

**MCN202 CONSTITUTION OF INDIA**

Sl. No.	Subject Learning Outcomes or Course Outcomes
	<b>On completion of course the students will be able to:</b>
1	Explain the background of the present constitution of India and features.
2	Utilize the fundamental rights and duties.
3	Understand the working of the union executive, parliament and judiciary.
4	Understand the working of the state executive, legislature and judiciary.
5	Utilize the special provisions and statutory institutions.
6	Show national and patriotic spirit as responsible citizens of the country.

**COURSE OUTCOMES FOR:**

**MEL202 FM & HM LAB**

Sl. No.	Subject Learning Outcomes or Course Outcomes
	<b>On completion of course the students will be able to:</b>
1	Determine the coefficient of discharge of flow measuring devices (notches, orifice meter and Venturi meter).
2	Calibrate flow measuring devices (notches, orifice meter and Venturi meter).



3	Evaluate the losses in pipes.
4	Determine the metacentric height and stability of floating bodies.
5	Determine the efficiency and plot the characteristic curves of different types of pumps and turbines.

**COURSE OUTCOMES FOR:**

**MEL 204 MACHINE TOOLS LAB- I**

Sl. No.	Subject Learning Outcomes or Course Outcomes
	On completion of course the students will be able to:
1	The students can operate different machine tools with understanding of work holders and operating principles to produce different part features to the desired quality.
2	Apply cutting mechanics to metal machining based on cutting force and power consumption.
3	Select appropriate machining processes and process parameters for different metals.
4	Fabricate and assemble various metal components by welding and students will be able to visually examine their work and that of others for discontinuities and defects.
5	Infer the changes in properties of steel on annealing, normalizing, hardening and tempering.

**S6 ME**

**S6 ME (2019-23 Batch)**

Sl no	Course code	Subject name	Staff Handled
1	MET302	HEAT & MASS TRANSFER	Dr. N Manikanda Prabu
2	MET304	DYNAMICS AND DESIGN OF MACHINERY	Mr. Subin B Markose
3	MET306	ADVANCED MANUFACTURING ENGINEERING	Mr. Sivan S Kumar
4	MET308	COMPREHENSIVE COURSE WORK	Mr. Roshith P
5	HUT310	MANAGEMENT FOR ENGINEERS	Mrs. Sony Sethukumar
6	MET 312	NON DESTRUCTIVE TESTING	Mrs. Arya P Mohan
7	MEL332	COMPUTER AIDED DESIGN & ANALYSIS LAB	Mr. Sangeeth S Kumar
8	MEL334	THERMAL ENGINEERING LAB-II	Mr. Arun Kumar G

**COURSE OUTCOMES FOR:**  
**MET 302 HEAT & MASS TRANSFER**

Sl. No.	Subject Learning Outcomes or Course Outcomes
	<b>On completion of course the students will be able to:</b>
1	Solve problems involving steady state heat conduction with and without heat generation in simple geometries.
2	Evaluate heat transfer coefficients for natural convection and forced convection situations using empirical relations.
3	Design Heat Exchangers and Fins and evaluate its performance.
4	Solve problems involving transient heat conduction and understand the basics of boiling and condensation.
5	Estimate radiation heat transfer between black body and gray body surfaces.
6	Solve problems involving mass transfer due to diffusion, chemical reaction and convection.

**COURSE OUTCOMES FOR:**  
**MET304 DYNAMICS AND DESIGN OF MACHINERY**

Sl. No.	Subject Learning Outcomes or Course Outcomes
	<b>On completion of course the students will be able to:</b>
1	Do engine force analysis and to draw turning moment diagrams.
2	Analyse free and forced vibrations of single degree of freedom systems.
3	Determine the natural frequencies of a two degree of freedom vibrating system and to calculate the stresses in a structural member due to combined loading.
4	Design machine elements subjected to fatigue loading and riveted joints.
5	Design welded joint and close coiled helical compression spring.

**COURSE OUTCOMES FOR:**  
**MET 306 ADVANCED MANUFACTURING ENGINEERING**

Sl. No.	Subject Learning Outcomes or Course Outcomes
	<b>On completion of course the students will be able to:</b>
1	To be conversant with the advanced machining process and to appreciate the effect of process parameters on the surface integrity aspects during the advanced machining process.
2	CNC programming, select appropriate tooling and fixtures.
3	To categorize the various nontraditional material removal process based on energy sources and mechanism employed.
4	Analyze the processes and evaluate the role of each process parameter during micro

	machining of various advanced material removal processes.
5	Explain the processes used in additive manufacturing for a range of materials and applications.

**COURSE OUTCOMES FOR:**

**MET308 COMPREHENSIVE COURSE WORK**

<b>Sl. No.</b>	<b>Subject Learning Outcomes or Course Outcomes</b>
	<b>On completion of course the students will be able to:</b>
1	Learn to prepare for a competitive examination.
2	Comprehend the questions in Mechanical Engineering field and answer them with confidence.
3	Communicate effectively with faculty in scholarly environments.
4	Analyze the comprehensive knowledge gained in basic courses in the field of Mechanical Engineering
5	

**COURSE OUTCOMES FOR:**

**HUT310 MANAGEMENT FOR ENGINEERS**

<b>Sl. No.</b>	<b>Subject Learning Outcomes or Course Outcomes</b>
	<b>On completion of course the students will be able to:</b>
1	Explain the characteristics of management in the contemporary context.
2	Describe the functions of management.
3	Demonstrate ability in decision making process and productivity analysis.
4	Illustrate project management technique and develop a project schedule.
5	Summarize the functional areas of management.
6	Comprehend the concept of entrepreneurship and create business plans.

**COURSE OUTCOMES FOR:**

**MET 312 NON DESTRUCTIVE TESTING**

<b>Sl. No.</b>	<b>Subject Learning Outcomes or Course Outcomes</b>
	<b>On completion of course the students will be able to:</b>
1	Have a basic knowledge of surface NDT which enables to carry out various inspections in accordance with the established procedures.
2	The students will be able to differentiate various defect types and select the appropriate NDT methods for the specimen.
3	Calibrate the instrument and evaluate the component for imperfections.

4	Have a basic knowledge of ultrasonic testing which enables them to perform inspection of samples.
5	Have a complete theoretical and practical understanding of the radiographic testing, interpretation and evaluation.

**COURSE OUTCOMES FOR:**

**MEL332 COMPUTER AIDED DESIGN & ANALYSIS LAB**

Sl. No.	Subject Learning Outcomes or Course Outcomes
	On completion of course the students will be able to:
1	Gain working knowledge in Computer Aided Design and modelling procedures.
2	Gain knowledge in creating solid machinery parts.
3	Gain knowledge in assembling machine elements.
4	Gain working knowledge in Finite Element Analysis.
5	Solve simple structural, heat and fluid flow problems using standard software.

**COURSE OUTCOMES FOR:**

**MEL334 THERMAL ENGINEERING LAB-II**

Sl. No.	Subject Learning Outcomes or Course Outcomes
	On completion of course the students will be able to:
1	Evaluate thermal properties of materials in conduction, convection and radiation.
2	Analyse the performance of heat exchangers.
3	Illustrate the operational performances of refrigeration and air conditioning systems.
4	Perform calibration of thermocouples and pressure gauges.

**S8 ME**

**S8 ME (2018-22 Batch)**

Sl no	Course code	Subject name	Staff Handled
1	ME 402	DESIGN OF MACHINE ELEMENTS 2	Mr. Sangeeth S Kumar
2	ME 404	INDUSTRIAL ENGINEERING	Mr. Subin B Markose
3	ME 476	MATERIAL HANDLING & FACILITIES PLANNING	Mr. Arun Kumar G
4	CE 482	ENVIRONMENTAL IMPACT ASSESSMENT	Mr. Sivan S Kumar
5	ME 492	PROJECT	Mr. Yadhukrishnan

**COURSE OUTCOMES FOR:**

**ME 402 DESIGN OF MACHINE ELEMENTS 2**

Sl. No.	Subject Learning Outcomes or Course Outcomes
	On completion of course the students will be able to:
1	To acquire knowledge and design of different types of clutches and brakes.
2	To understand the basics of bearings, types of bearing, lubrication system and design of bearings.
3	To understand the concept of gears and the basic procedure in design of spur gear helical, bevel, worm gear.
4	To acquire knowledge and design of flat belt, v belt and chains.
5	To acquire basic knowledge in Connecting rod and Pressure vessels.

**COURSE OUTCOMES FOR:**

**ME404 INDUSTRIAL ENGINEERING**

Sl. No.	Subject Learning Outcomes or Course Outcomes
	On completion of course the students will be able to:
1	Acquire a sound knowledge in principles & applications of Industrial Engineering.
2	Use Industrial Engineering application area such as Facility Planning, Material Handling methods, maintenance planning, Methods engineering, Job Evaluation ,Merit Rating, Industrial relations, Production planning and control, Inventory Control, and Statistical quality control.
3	Select and use an appropriate principles/methods/ techniques/ modern concepts with reference to given application/situation in Facility Planning, Material Handling methods, maintenance planning, Methods engineering, Job Evaluation ,Merit Rating, Industrial relations, Production planning and control, Inventory Control, and Statistical quality control.
4	Develop and implement new ideas/ modern concepts with reference to given application/situation in Industrial Engineering for best manufacturing practices.
5	Preparation and ability to engage in independent and life-long learning in the context of technological change in Industrial Engineering.

**COURSE OUTCOMES FOR:**

**ME 476 MATERIAL HANDLING & FACILITIES PLANNING**

Sl. No.	Subject Learning Outcomes or Course Outcomes
	On completion of course the students will be able to:

1	Identify the value of facility planning on the strategy of a firm.
2	Develop a systematic plant layout.
3	Analyse the safety and environmental aspects in facilities planning.
4	Understand various material handling systems and classification of material handling equipment.
5	Selection and Maintenance of material handling equipment with safety and ergonomics aspects

**COURSE OUTCOMES FOR:**

**CE 482 ENVIRONMENTAL IMPACT ASSESSMENT**

Sl. No.	Subject Learning Outcomes or Course Outcomes
	<b>On completion of course the students will be able to:</b>
1	The students will have a basic knowledge of various air pollution sources and their impacts.
2	The students will have a basic knowledge of various water pollution sources and their impacts.
3	The students will have a basic knowledge of various land/soil pollution sources and their impacts.
4	The students will have a basic knowledge of various noise pollution sources and their impacts.
5	The students will have a basic knowledge of global pollution sources and their impacts.

**COURSE OUTCOMES FOR:**

**ME 492 PROJECT**

Sl. No.	Subject Learning Outcomes or Course Outcomes
	<b>On completion of course the students will be able to:</b>
1	Ability to effectively gather and interpret information from literature survey. And use this knowledge to identify, formulate, analyze and solve complex problems and to evaluate and interpret various solutions.
2	Gain the ability to communicate effectively with written, oral, and visual means in a technical setting.
3	Ability to use modern design and analysis tools to analyse and evaluate complex problems.
4	Students will be able to carry out calculations involved in design, consider and evaluate alternate assumptions, approaches, and procedures. Ability to fabricate system components related to engineering problems giving consideration to environment and society.
5	Ability to serve as effective team member to plan and complete the project/task within a specified budget and time.