

<b>Basic Mechanical Engineering</b>	
<b>(RBM1B001/RBM2B001)(1st/2nd)</b>	
<b>CRBM1B001.1</b>	Understand and apply various thermodynamic terminologies and laws to different processes and real systems.
<b>CRBM1B001.2</b>	Learn Working principle and various applications of Thermodynamics
<b>CRBM1B001.3</b>	Understand working principle of different components used for power Transmission and basic configuration of Robotics.
<b>CRBM1B001.4</b>	

<b>Engineering Mechanics</b>	
<b>(REM2B001)(2nd)</b>	
<b>CREM2B001.1</b>	To be able to resolve system of forces in equilibrium using analytical method and learn how to draw FBD of force components .
<b>CREM2B001.2</b>	Learn to find Centre of Gravity, MOI of a body and analysis of Truss bodies ,Apply them for practical problems arises in structures.
<b>CREM2B001.3</b>	Understand Concept of Kinematics & dynamics and application of D'alemberts principle.
<b>CREM2B001.4</b>	Gain knowledge on Motion in a curved path and solve problems related to Work energy principle.

<b>Basic Mechanical Engineering lab</b>	
<b>(RBM1B201/RBM2B201/)(1st/2nd)</b>	
<b>CRBM1B201.1</b>	Know the working of steam power plant and learn how IC engine works.
<b>CRBM1B201.2</b>	Explain different power absorbing device such as Refrigerator and Air conditioner.
<b>CRBM1B201.3</b>	Learn different parts of automobile and its working, Determine VR of Transmission device such as Belt drive.
<b>CRBM1B201.4</b>	Understand different types of gear and gear trains.
<b>CRBM1B201.5</b>	Gain Knowledge on Bernoullis equation and various pressure measurement devices.

<b>Engineering Graphics &amp; Design lab</b>	
<b>(REG1B201/REG2B201/)(1st/2nd)</b>	
<b>C REG1B201.1</b>	Get acquainted with knowledge of various lines and their geometrical constructions.
<b>C REG1B201.2</b>	Learn to draw 2D models using AutoCAD software.
<b>C REG1B201.3</b>	Gain knowledge about orthographic projections.
<b>C REG1B201.4</b>	Become proficient in drawing the projections of various solids.
<b>C REG1B201.5</b>	Improve their imagination skills by gaining knowledge about Isometric projection.

<b>Workshop</b>	
<b>(RWO1B202/RWO2B202)(1st/2nd)</b>	
<b>CRWO1B202.1</b>	Ability to design and model various basic prototypes in the trade of fitting such as Straight fit, V- fit and making a paper weight of M.S.
<b>CRWO1B202.2</b>	Practice on Gas welding and Electric arc welding.
<b>CRWO1B202.3</b>	Learn to prepare a butt Joint with given work pieces to make a furniture.
<b>CRWO1B202.4</b>	Experimental study in Shaping machine.
<b>CRWO1B202.5</b>	Study of Milling machine such as gear cutting, external and internal threads.

<b>Mechanics of Solid</b>	
<b>(RME3C001)(3rd)</b>	
<b>C RME3C001.1</b>	Able to understand the concept of stress, strain and strain energy and Analyze Various structural members subjected to Thermal Stress & Learn Biaxial Stress and strain.
<b>C RME3C001.2</b>	Apply thin pressure vessel formulas to determine various stress and strain. And valuate Shear force and bending moment of various beam subjected to different loading conditions
<b>C RME3C001.3</b>	Calculate slope and deflection of a beam by various methods such as Integration method & area moment method. Understand and apply Eulers formula in case of Columns.
<b>C RME3C001.4</b>	Compute the torsion for the circular shaft and analyse twisting moment & Understand the concept of stress strain diagram using UTM.

<b>Fluid Mechanics and Hydraulic Machines</b>	
<b>(RME3C002)(3rd)</b>	
<b>CRME3C002.1</b>	Define fluid and Understand Fluid properties, Buoyancy, stability of submerged and floating bodies, Manometry, and static fluid forces on different surfaces
<b>CRME3C002.2</b>	Classify various types of flow, Mass Momentum and energy conservation and related equations.
<b>CRME3C002.3</b>	Analyze Bernoullis equation and its applications and Determine major and minor losses in case of pipes and its power transmission.
<b>CRME3C002.4</b>	Understand and classify different Turbines and Pumps, plot curves for various efficiencies and draw velocity triangles for the same.

<b>Fluid Mechanics and Hydraulic Machines Lab</b>	
<b>( RME3C202)(3rd)</b>	
<b>C</b> <b>RME3C202.1</b>	Determine Metacentric height of floating bodies and discharge of Orifice meter.
<b>C</b> <b>RME3C202.2</b>	Determination of momentum equation and force exerted by the surface on the jet.
<b>C</b> <b>RME3C202.3</b>	Study performance of Pelton, Francis and Kaplan i.e efficiency and losses.
<b>C</b> <b>RME3C202.4</b>	Study performance of Centrifugal, reciprocating and gear pump.
<b>C</b> <b>RME3C202.5</b>	To find Critical Reynolds number and determine Volumetric flow rate, velocity, friction factor in case of flow through pipes.

<b>Kinematics and Dynamics of Machines ( RME4C001)(4th)</b>	
<b>( RME4C001)(4th)</b>	
<b>C</b> <b>RME4C001.1</b>	Able to interpret the fundamentals of mechanism and machines and inversion of different types of mechanism.
<b>C</b> <b>RME4C001.2</b>	Demonstrate different types of gears and gear trains and calculation of Velocity Ratio.
<b>C</b> <b>RME4C001.3</b>	Learn to find velocity and acceleration of Slider crank mechanism and expose to force transmission system.
<b>C</b> <b>RME4C001.4</b>	Analyze friction elements such as Clutch, Screw Jack and different types of transmission drives and Understand principle of Brakes and dynamometers.

<b>Engineering Thermodynamics (RME4C002)(4th)</b>	
<b>(RME4C002)(4th)</b>	
<b>C</b> <b>RME4C002.1</b>	Explain Laws of Thermodynamics, Understand concept of exergy and entropy generation.
<b>C</b> <b>RME4C002.2</b>	Analyze various Vapour power cycles and effect of operating parameters on their performance.
<b>C</b> <b>RME4C002.3</b>	Analyze the performance of gas and refrigeration cycles and identifies methods to improve thermodynamic performance.
<b>C</b> <b>RME4C002.4</b>	To understand the utility of compressed air and different kind of compressor. Evaluate the performance of reciprocating compressor.

<b>Introduction to Physical Metallurgy and Engineering Materials</b>	
<b>(RME4C003)(4th)</b>	
<b>C</b> <b>RME4C003.1</b>	Distinguish between Crystal structure and correlate to structure to mechanical properties.
<b>C</b> <b>RME4C003.2</b>	Predict material response to different type of heat treatment and Concept of alloy formation
<b>C</b> <b>RME4C003.3</b>	Analyze phase diagram of materials, properties of different alloys and their typical uses and learn TTT diagram.
<b>C</b> <b>RME4C003.4</b>	Understand different types of Plastics and ceramics & their applications.

<b>Mechanical Measurement, Metrology &amp; Reliability</b>	
<b>(RME4D002)(4th)</b>	
<b>C</b> <b>RME4D002.1</b>	Understand basic purpose of measurement, types of errors, static and dynamic characteristic of instruments.
<b>C</b> <b>RME4D002.2</b>	Learn about Transducers and different processes of strain measurements. Know different methods of pressure and temperature measurement.
<b>C</b> <b>RME4D002.3</b>	Understand Line and End standards, measurement of surface roughness and fundamentals of Limit, fit and Tolerance.
<b>C</b> <b>RME4D002.4</b>	Learn about system reliability, Markov model and Life test of components.

<b>Kinematics and Dynamics of Machines Lab</b>	
<b>(RME4C201)(4th)</b>	
<b>C</b> <b>RME4C201.1</b>	Design the working model related to Kinematics and dynamics
<b>C</b> <b>RME4C201.2</b>	understand the basic concept of screw jack to find its efficiency of Journal Bearing
<b>C</b> <b>RME4C201.3</b>	Understand the basic concepts of simple, compound and epicyclic gear trains and determine velocity ratio
<b>C</b> <b>RME4C201.4</b>	Understand the basic principle and function of Clutch, brake and dynamometer in automobiles
<b>C</b> <b>RME4C201.5</b>	Analyse and apply the Coriolis component of acceleration.

<b>Engineering thermodynamics Lab</b>	
<b>(RME4C202)(4th)</b>	
<b>C</b> <b>RME4C202.1</b>	Identify and explain the different parts of petrol and diesel engines, and to draw valve timing diagrams.
<b>C</b> <b>RME4C202.2</b>	Understand the basic principle, working of steam power plant, refrigeration system and gas turbine power plant and discuss the various performance parameters.
<b>C</b> <b>RME4C202.3</b>	Obtain the performance characteristics of reciprocating air compressor, centrifugal Air compressor and gear pump.
<b>C</b> <b>RME4C202.4</b>	Study of Throttling Calorimeter to find dryness fraction of steam and the variation of pressure wrt enthalpy
<b>C</b> <b>RME4C202.5</b>	Performance Test of four stroke single cylinder CI and SI Engine and Find Indicated Power of multi cylinder SI or CI Engine.

<b>Introduction to Physical Metallurgy and Engineering Materials Lab</b>	
<b>(RME4C203)(4th)</b>	
<b>C</b> <b>RME4C203.1</b>	Study Crystal Structures such as BCC, FCC etc.

<b>C</b> <b>RME4C203.2</b>	Describe mechanism of metallurgical microscope and Prepare a specimen of Metallographic Analysis.
<b>C</b> <b>RME4C203.3</b>	Analyse the microstructure of carbon steel, Cast iron and Non ferrous metals
<b>C</b> <b>RME4C203.4</b>	Explain hardenability test of Steels and apply Jominy end quench test in heat treatment process.
<b>C</b> <b>RME4C203.5</b>	Determine hardness of ferrous materials and Find impact strength and toughness of a material using Charpy/Izod test.

<b>Basic Manufacturing Processes</b>	
<b>( RME5C001)(5th)</b>	
<b>C</b> <b>RME5C001.1</b>	Learn Importance of foundry and its applications in real life and Explain different casting methods with their process details, applications and limitations.
<b>C</b> <b>RME5C001.2</b>	Classify and explain in detail the different welding methods with brief introduction to brazing and soldering.
<b>C</b> <b>RME5C001.3</b>	Understand the powder metallurgy process with its typical advantages, limitations and industrial applications.
<b>C</b> <b>RME5C001.4</b>	Learn Extrusion process and its types and use of sheet metal in making products.

<b>Mechanisms and Machines</b>	
<b>( RME5C002)(5th)</b>	
<b>CRME5C002.1</b>	Learn Davis and Ackermann Steering gear mechanism, Design of Cam and draw its profile using graphical method and Use of flywheel.
<b>CRME5C002.2</b>	Explain the principle and applications of a Governor and gyroscope.
<b>CRME5C002.3</b>	Understand the principle of balancing of rotating masses and analyze static and dynamic balancing of masses.
<b>CRME5C002.4</b>	Analyze various SDOF systems and solve numericals.

<b>Heat Transfer</b>	
<b>( RME5C003)(5th)</b>	
<b>C</b> <b>RME5C003.1</b>	Understand basic modes of heat transfer and compute temperature distribution in steady state and unsteady state heat conduction and Analyse heat transfer through extended surfaces.
<b>C</b> <b>RME5C003.2</b>	Interpret and analyse free & forced convection heat transfer process.
<b>C</b> <b>RME5C003.3</b>	Analyse radiative heat transfer and learn various terms used and heat transfer between two or more black/gray bodies by applying the concept of electrical analogy, shape factor and reradiating surfaces.
<b>C</b> <b>RME5C003.4</b>	Analyse the performance of heat exchangers under different flow conditions using LMTD and NTU method and know different types of condensation processes.

<b>Automobile Engineering</b>	
<b>( RME5D001)(5th)</b>	

<b>C</b> <b>RME5D001.1</b>	Understand basic terminologies related to Automobile and learn different types of breaking systems used.
<b>C</b> <b>RME5D001.2</b>	Describe working principle of different components used in Automobile transmission.
<b>C</b> <b>RME5D001.3</b>	Analyze Front wheel geometry and Steering system.
<b>C</b> <b>RME5D001.4</b>	Exposure to E vehicles and know the future applications.

<b>Rapid Manufacturing Process</b>	
<b>( RME5D005)(5th)</b>	
<b>C</b> <b>RME5D005.1</b>	Describe rapid product development, rapid prototyping and applications.
<b>C</b> <b>RME5D005.2</b>	Discuss different types of Rptechinques based on raw materials.
<b>C</b> <b>RME5D005.3</b>	Introduction to Ballastic particle manufacturing(2D & 3D)
<b>C</b> <b>RME5D005.4</b>	Use appropriate tooling for rapid prototyping process and rapid prototyping techniques for reverse engineering.

<b>Basic Manufacturing Process Lab</b>	
<b>(RME5C201)(5th)</b>	
<b>C</b> <b>RME5C201.1</b>	Understand the concepts of clay content and strength.
<b>C</b> <b>RME5C201.2</b>	Know the various foundry processes
<b>C</b> <b>RME5C201.3</b>	Able to Prepare the wood patterns and determine the strength of joints.
<b>C</b> <b>RME5C201.4</b>	Understand different welding processes and analyse the sheet metal processes and its application
<b>C</b> <b>RME5C201.5</b>	Understand the concepts of various rolling mills and extrusion processes

<b>Mechanism and Machines Lab</b>	
<b>( RME4C202)(5th)</b>	
<b>C</b> <b>RME4C202.1</b>	Design working model of Gear/Flywheel /Static balancingand SDOF vibration system etc.
<b>C</b> <b>RME4C202.2</b>	Analyse gyroscopic couple using gyroscopic test rig and evaluate Characteristics of Spring loaded governor
<b>C</b> <b>RME4C202.3</b>	Explain the principle of static and dynamic balancing and evaluate critical speed of rotating shaft

<b>C</b> <b>RME4C202.4</b>	Evaluate natural frequencies of damped and undamped vibration System and compare the theoretical and practical results.
<b>C</b> <b>RME4C202.5</b>	Understanding of Interference and undercutting of Gear drives and demonstrate cam and followers arrangements to plot displacement v/s angle of rotation curve for these.

<b>Heat Transfer Lab</b>	
<b>( RME5C203)(5th)</b>	
<b>C</b> <b>RME5C203.1</b>	Understanding thermal conductivity in slabs
<b>C</b> <b>RME5C203.2</b>	Analyse the heat transfer coefficient of convection processes and determine efficiency and effectiveness of fins
<b>C</b> <b>RME5C203.3</b>	Determine the emissivity of a grey and black surfaces and stefan boltzman constant.
<b>C</b> <b>RME5C203.4</b>	Know the performance of heat exchanger device
<b>C</b> <b>RME5C203.5</b>	Understanding critical heat flux and its analysis

<b>Machine Elements</b>	
<b>( RME6C001)(6th)</b>	
<b>C</b> <b>RME6C001.1</b>	Understanding of Theories of Failure and stress concentration factor in bodies.
<b>C</b> <b>RME6C001.2</b>	Design of Joints such as Rivet and welded joints etc.
<b>C</b> <b>RME6C001.3</b>	Analyse and understand the function of springs and its application.
<b>C</b> <b>RME6C001.4</b>	Understanding the role of bearing in practical applications and selection of bearing wrt given requirement.

<b>Machining Science and Technology</b>	
<b>( RME6C002)(6th)</b>	
<b>C</b> <b>RME6C002.1</b>	Understand the cutting tool geometry, mechanism of chip formation and measurement of cutting force.
<b>C</b> <b>RME6C002.2</b>	Identify basic parts and operations of conventional machines such as shaper, planer, drilling, boring, milling and grinding machine.
<b>C</b> <b>RME6C002.3</b>	Know the working principle of different types of lathe such as Capstan & turret lathe, Copying Lathe etc.
<b>C</b> <b>RME6C002.4</b>	Understand various Non traditional processes such as USM, LBM, ECM and AJM etc.

<b>Smart and Composite Materials</b>	
<b>( RME6D001)(6th)</b>	
<b>C</b> <b>RME6D001.1</b>	Understand the basic idea and importance of constituents of composite materials and Apply knowledge to analyze fabrication methodology of MMC.
<b>C</b> <b>RME6D001.2</b>	Describe the role of ceramic matrix composite in different practical application.

<b>C</b> <b>RME6D001.3</b>	Evaluate the importance of polymer matrix composite and its impact on environment.
<b>C</b> <b>RME6D001.4</b>	Understand the basic mechanics related to material behaviours.

<b>Design of Machine Element Lab</b>	
<b>( RME6C201)(6th)</b>	
<b>C</b> <b>RME6C201.1</b>	Design Working Model related to rivet joint and Journal bearing
<b>C</b> <b>RME6C201.2</b>	Design the Rivet and draw it on drawing paper
<b>C</b> <b>RME6C201.3</b>	Design the Cotter and Knuckle joint and draw it on drawing sheet
<b>C</b> <b>RME6C201.4</b>	Using Solid works, Know how to draw bearing, spring and coupling using various tools.
<b>C</b> <b>RME6C201.5</b>	Design the Shafts subjected to combined loading and draw it on drawing sheet

<b>Machining Science and Technology Lab</b>	
<b>( RME6C202)(6th)</b>	
<b>C</b> <b>RME6C202.1</b>	Understand various metal cutting processes and prepare job using lathe machine
<b>C</b> <b>RME6C202.2</b>	Understand working principle and application of grinding, shaper and slotter machine and Know the gear cutting process on milling machine
<b>C</b> <b>RME6C202.3</b>	Determine the cutting forces of lathe tool dynamometer and drill tool dynamometer.
<b>C</b> <b>RME6C202.4</b>	Learn non-traditional processes and its advantages over traditional machines
<b>C</b> <b>RME6C202.5</b>	Understand the function of a lathe and milling and make a job using the machine.
<b>Power Plant Engineering</b>	
<b>( RME7D001)(7th)</b>	
<b>C</b> <b>RME7D001.1</b>	Understand the basic knowledge of Different types of Power Plants, site selection criteria, types of boilers, boiler mounting & accessories.
<b>C</b> <b>RME7D001.2</b>	Evaluate the flow through nozzle and analyse velocity diagram for impulse and reaction turbine.
<b>C</b> <b>RME7D001.3</b>	Analyse the steam condensers design cooling tower for power and the efficient problem-solving techniques.
<b>C</b> <b>RME7D001.4</b>	Understanding the Basic knowledge of Different types of nuclear power plants including PWR, BWR gas cooled reactor, liquid metal fast breeder reactor etc. and Economics of Powerplant.

<b>Mechanical Vibration</b>	
<b>( RME7D004)(7th)</b>	
<b>C</b> <b>RME7D004.1</b>	Describe different types of vibratory system and Concept of DOF of undamped free vibration



<b>C</b> <b>RME7D004.2</b>	Analyse and solve problems of Damped and Forced vibration system involving frequency response curves, phase angle plots, vibration isolation and transmissibility
<b>C</b> <b>RME7D004.3</b>	Solve 2 degree of freedom Systems and know its applications
<b>C</b> <b>RME7D004.4</b>	Analyse and solve problems involving vibrations of multi degree of freedom and continuous systems.