NM INSTITUTE OF ENGINEERING & TECHNOLOGY
APPROVED BY AICTE, NEW DELHI, AFFILIATED TO BPUT, ODISHA
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DEPARTMENT OF MECHANICAL ENGINEERING

WORKSHOP PRACTICE

SUBJECT CODE: RWO1B202/RWO2B202 **SEMESTER: 1st/2nd**

Course Outcome:

Students will be able to

CO1: Understand the appropriate tools, materials, instruments required for specific operations in workshop

CO2: Prepare a male and female joint of M.S. or make a paperweight of M.S. using fitting tools

CO3: Explain gas welding & electric arc welding practice and prepare a Lap joint, a T-joint or a Butt joint

CO4: Understand working of lathe, milling machine and shaper

CO5: Prepare jobs using machine tools

CO6: Apply safety consciousness and show team work.

BASIC MECHANICAL ENGINEERING LABORATORY

SUBJECT CODE: RBM1B001/ RBM2B001 **SEMESTER: 1st/2nd**

Course Outcome:

Students will able to

CO1: Explain the working of steam power plant, single and multi-cylinder four stroke engine and differentiate between four stroke and two stroke engines

CO2: Explain the operation of an air conditioner and differentiate between a refrigerator and an air-conditioner

CO3: Describe parts of an automobile

CO4: Determine velocity ratio of belt drive and gear train

CO5: Verify Bernoulli's Theorem and apply the theorem to Venturimeter

CO6: Calibrate Bourdon Tube Pressure gauge and measure pressure using manometers

FLUID MECHANICS & HYDRAULIC MACHINES LABORATORY

SUBJECT CODE: RME3C202 **SEMESTER: 3rd**

Course Outcome:

CO1: Determine experimentally metacentric height of the given body

CO2: Determine experimentally Cd, Cv & Cc of the given orifice

CO3: Apply basic fundamental theorems governing fluid flows i.e., continuity, energy and momentum

CO4: Evaluate the performance of turbines

CO5: Analyze the performance and behavior of fluid in motion

CO6: Analyze the working of hydraulic pumps

MECHANICS OF SOLID LABORATORY

SUBJECT CODE: RME3C201 **SEMESTER: 3rd**

Course Outcome:

Students will be able to

CO1: Describe the mechanical behavior of engineering materials subjected to various types of stresses and compute the resulting strain and strain energy

CO2: Determine compressive strength of solid materials

CO3: Calculate bending strength of solid materials

CO4: Evaluate rigidity modulus of solid materials

CO5: Perform double shear test on solid materials

CO6: Evaluate fatigue strength of solid materials

ENGINEERING THERMODYNAMICS LABORATORY

SUBJECT CODE: RME4C202 **SEMESTER: 4th**

Course Outcome:

Students will be able to

CO1: Describe different types of IC engines and corresponding gas power cycles

CO2: Explain the operation of a steam power plant

CO3: Explain the operation of a refrigerator and an air-conditioner

CO4: Calculate the performance parameters of reciprocating air-compressor

CO5: Estimate performance characteristics of gear pump

CO6: Evaluate the performance of 4 – stroke S.I and C.I engines

INTRODUCTION TO PHYSICAL METALLURGY AND ENGINEERING MATERIALS LABORATORY

SUBJECT CODE: RME4C203 **SEMESTER: 4th**

Course Outcome:

Students will be able to

CO1: Demonstrate the working principle of optical microscope

CO2: Identify the microstructures of different types of cast Iron and carbon steel

CO3: Analyze the microstructures of non-ferrous metal

CO4: Understand the change in the properties of materials by heat treatment and importance of various heat treatments and its procedures

CO5: Determine hardness of ferrous materials in order to know the ability to resist penetration

CO6: Evaluate the impact strength of a ferrous material

KINEMATICS AND DYNAMICS OF MACHINES LABORATORY

SUBJECT CODE: RME4C201 **SEMESTER: 4th**

Course Outcome:

Students will be able to

CO1: Design kinematic mechanisms and their inversions; analyze velocity and acceleration of various mechanisms

CO2: Design belt pulley drive system considering different combination of friction material

CO3: Estimate the rotational inertia of a body

CO4: Evaluate velocity ratio, mechanical advantages and efficiency of a lifting device

CO5: Calculate the brake power by rope brake dynamometer

CO6: Calculate gear ratio of the Epicyclic gear system and measure the output torque

HEAT TRANSFER LABORATORY

SUBJECT CODE: RME5C003 **SEMESTER: 5th**

Course Outcome:

Students will be able to

CO1: Determine thermal conductivity of composite slab also determine the heat transfer rate and temperature distribution

CO2: Determine the surface heat transfer coefficient for heated and vertical cylinder in natural/forced convection

CO3: Measure the emissivity of the test plate surface

CO4: Compare effectiveness in parallel and counter flow heat exchangers

CO5: Evaluate the efficiency of effectiveness of fins in natural convection and forced convection

CO6: Determine Stefan Boltzmann constant of radiative heat transfer

MECHANISMS AND MACHINES LABORATORY

SEMESTER: 5th **SUBJECT CODE: RME5C002**

Course Outcome:

Students will be able to

CO1: Design working models of machine components

CO2: Interpret the value of gyroscopic couple found from the experiment in practical applications

CO3: Evaluate the performance characteristics of a governor

CO4: Determine the critical speed of a rotating shaft

CO5: Compute unbalanced couple in reciprocating and rotating masses

CO6: Solve interference problems in gear and chain drives

BASIC MANUFACTURING PROCESS LABORATORY

SUBJECT CODE: RME5C001 **SEMESTER: 5th**

Course outcome:

Students will be able to

CO1: Analyze the importance of different test carried out on moulding sand and prepare sand moulds for a given component

CO2: Understand and apply the principles of metal casting processes & exhibit use of safe working procedures

CO3: Design of a wood pattern taking different allowance into consideration

CO4: Demonstrate working principles of MIG welding machines and prepare a job

CO5: Prepare a job using plastic injection moulding machine

CO6: Know various aspects of extrusion technology, equipment and product development

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MACHINING SCIENCE AND TECHNOLOGY LAB

SUBJECT CODE: RME6C002 **SEMESTER: 6th**

Course Outcome:

Students will be able to

CO1: Prepare a job on lathe with tapper turning, thread cutting, knurling and groove cutting

CO2: Perform gear cutting on milling machine

CO3: Prepare finished surfaces using shaper, planner and slotting machine

CO4: Gain hands-on experience in surface and cylindrical grinding

CO5: Determine cutting forces in different tools using tool dynamometer

CO6: Explain different non-traditional manufacturing processes & make jobs in CNC Lathe

DESIGN OF MACHINE ELEMENTS LAB

SUBJECT CODE: RME6C002 **SEMESTER: 6th**

Course Outcomes:

Students will able to

CO1: Design working model of machine elements

CO2: Design and make drawing of Riveted joint, Cotter joint & Knuckle joint

CO3: Design and make drawing of Flange coupling

CO4: Design and make drawing of springs

CO5: Design shafts subjected to combined loading

CO6: Design and make drawing of bearing