BANKURA UNNAYANI INSTITUTE OF ENGINEERING
Lab Status 1st to 8th Semister '2019 ME Dept

Lab Name	Name of the Experiments
Engineering Graphics & Design ES-ME191/ ES-ME 291	
Mechanical Work Shop ES-ME-192/ ES-ME-292	To make a pin from a mild steel rod in a lathe.
	To make rectangular and vee slot in a block of cast iron or mild steel in a shaping and / or milling.
	To make a Gauge from MS plate.
	To make wooden joints and/or a pattern or like.
	To join two thick (approx 6mm) MS plates by manual metal arc welding.
	To join two thin mild steel plates or sheets by gas welding
	One/ two green sand moulds to prepare, and a casting be demonstrated.
	A simple job of making a square rod from a round bar or like.
ME 391 : Machine Drawing-I	
Workshop Practice-II ME-392	Pattern Making; pattern material, pattern allowances and types of patterns; (5P)
	Mould making Practice: Uses of moulding tools: green sand moulding, gating system, risering system, core making; (6P)
	Making a typical product using sheet metal; (3P)
	Basic Forging processes like upsetting, drawing down and forge welding; (5P)
	Practicing Resistance Spot Welding, Shielded Metal Arc Welding and Gas Welding; (7P)
	Machining of typical products involving lathe, milling/shaping operations and finishing process(es); Machining of gears. (10P)
Applied Mechanics Lab ME-393	Determining spring stiffness under tension and compressive loads, Strain gauge based strain/ deflection/ force measurement of a cantilever beam.
	Tension Test and Compression of ductile materials, stress-strain diagram.
	Torsion Test.
	Hardness Tests: Brinnel and Rockwell.
	Experiments on friction: Determination of coefficient of friction.
	Experiments to observe speed ratios obtained using gears.
ME 491: Fluid mechanics & Hydraulic Machines Lab	Fluid flow measurements: Determining coefficient of discharge for venturimeter, orificemeter, weirs.
	Experiment to verify Bernouli's theorem;
	Flow through pipes: Reynold's experiments; Pipe friction in laminar and turbulent flow regimes; Pitot tube experiment.
	Experiments on Fluid Machinery : Pumps and Turbines.
ME 492: Manufacturing Technology Lab	Sand preparation and testing: specimen preparation for testing permeability, clay content, grain fineness number, moisture content, green compression strength.
	Casting of metals after preparation of suitable moulds; Experiments on

	properties of post casting, fettling, cleaning, deburring and polishing operations.
	Practicing smithy or forging.
	Varying process parameters in GMAW and SMAW, Testing for Joint defects.
ME 493: Material Testing Lab	Impact tests: Charpy and Izod tests.
	Test for drawability of sheet metals through cupping test.
	Fatigue test of a typical sample.
	Sample preparation and etching of ferrous and non-ferrous metals and alloys for metallographic observation.
	Experiments on heat treatment of carbon steels under different rates of cooling including quenching, and testing for the change in hardness and observing its microstructural changes through metallographic studies.
	Observation of presence of surface/ sub-surface cracks using different non-destructive techniques, such as dye penetration (DP) test.
ME 494: Machine Drawing-II	
Applied Thermodynamics & Heat Transfer Lab ME-592	Determination of dryness fraction of steam by combined separating and throttling calorimeter.
	Study and performance test of a single acting reciprocating air compressor.
	Determination of thermal conductivity of a metal rod.
	Determination of thermal conductivity of an insulating powder/or an insulating plate.
	Determination of 'h' for natural and forced convection over a pin fiN.
	Verification of emissivity of a plate.
	Study of a shell and tube heat exchanger and determination of LMTD.
Design Practice-1 ME-593	Creo 2.0 & Auto CAD Software
Metrology & Measurement Lab ME-594	(i) Vernier height & depth gauge, (ii) Dial micrometer, (iii) Thread gauge, (iv) Radius gauge, (v) Filler gauge, (vi) Slip gauge.
	Measurement of angle of a component using :
	(i) Vernier bevel protractor,(ii) Sine-bar and slip gauges.
	Checking / measuring parallelism, cylindricity and concentricity of components using dial indicator.
	Measurement of a specific dimension for a lot of components, and prepare a histogram from the data obtained.
	Measurement of surface finish by a Talysurf instrument.
	Determine natural cooling characteristics of a heated object by using a thermocouple.
	Fixing a strain gauge on a cantilevered flat section of steel. Then calibration of it as a force dynamometer using a Wheatstone bridge and loading arrangement
Machining & Machine Tools Lab ME-691	Measurement of cutting forces (Pz and Px or Py) in straight turning at different feeds and velocities.
	Measurement of average cutting temperature in turning under different speed – feed combinations.
	Measurement of surface roughness in turning under different conditions.
	Study of chip formation (type, color & thickness) in turning mild steel and evaluation of role of variation of cutting velocity and feed on chip reduction coefficient /cutting ratio and shear angle .
	Producing a cast iron vee – block by machining in a shaping machine.
	Production of a straight toothed spur gear from a cast or forged disc in milling

	machine.
I C Engine Lab ME-692	Determination of calorific value of a fuel by Bomb calorimeter.
	Flue gas analysis by ORSAT apparatus.
	Study of valve timing diagram of Diesel Engine.
	Performance Test of a muticylinder Petrol Engine by Morse method.
	Performance Text of an I.C. Engine using electric (eddy current) dynamometer.
	Use of catalylitic converters and its effect on flue gas of an I.C. Engine.
	Study of MPFI (multipoint fuel injection system).
Design Practice-II ME-693	Creo 2.0 & Auto CAD Software
Dynamics of Machines Lab ME-694	Studying vibratory systems of single and more than one degree of freedom in linear and rotory systems;
	Static and dynamic balancing of rotating masses;
	Balancing of reciprocating masses;
	Experiments on working of governor, operation and analysis.
	Experiments on working of gyroscope, operation and analysis.
	Studying operation of cams and its analysis.
Mechatronics Lab ME-695B	Open loop position control.
	Closed loop position control using positional and velocity feedback.
	Use of analog and digital servosystems.
	Use of PID controller with temparature control.
	Experiments on pneumatic drives and actuators.
	Experiments on hydraulic drives and actuators.
Advanced Manufacturing Technology Laboratory ME-791	Study of CNC Lathe.