Class : 3 **Scheme Code : 40** **Sessional : 400**

Subject Code	Type	Marks	Subject Name
0093	T	75	APPLIED MECHANICS
0193	T	75	ELEMENTS OF ELECTRICAL AND ELECTRONICS ENGINEERING
0593	T	75	WORKSHOP TECHNOLOGY
3053	T	75	ENGINEERING MATERIALS
4653	T	75	METROLOGY AND INSTRUMENTATION
9053	T	75	MECHANICAL ENGINEERING DRAWING-I
1093	P	25	APPLIED MECHANICS
1193	P	50	ELEMENTS OF ELECTRICAL AND ELECTRONICS ENGINEERING
1593	P	50	WORKSHOP TECHNOLOGY-1
6653	P	50	METROLOGY AND INSTRUMENTATION
8053	P	50	ENGINEERING MATERIALS

Class : 4 **Scheme Code : 40** **Sessional : 300**

Subject Code	Type	Marks	Subject Name
2093	T	75	STRENGTH OF MATERIALS
2493	T	75	WORKSHOP TECHNOLOGY-II
4853	T	75	HYDRAULICS AND PNEUMATICS
5253	T	75	THERMODYNAMICS-I
9453	T	75	MECHANICAL ENGINEERING DRAWING-II
9585	T	75	GENERIC SKILLS AND ENTREPRENEURSHIP DEVELOPMENT
3093	P	50	STRENGTH OF MATERIALS
3493	P	50	WORKSHOP TECHNOLOGY-II
5853	P	50	HYDRAULICS AND PNEUMATICS
9253	P	50	THERMODYNAMICS-I

Class : 5 **Scheme Code : 40** **Sessional : 325**

Subject Code	Type	Marks	Subject Name
5317	T	75	THEORY OF MACHINES
5332	T	75	WORKSHOP TECHNOLOGY-III
6853	T	75	REFRIGERATION AND AIR CONDITIONING
6953	T	75	THERMODYNAMICS -II
9520	T	75	BASICS OF MANAGEMENT
5333	P	50	WORKSHOP TECHNOLOGY-III
7153	P	50	INDUSTRIAL TRAINING DURING VACATIONS AFTER 4TH

			SEM
7353	P	75	COMPUTER AIDED DRAFTING AND MODELING
9853	P	50	REFRIGERATION AND AIR CONDITIONING
9953	P	50	THERMODYNAMICS-II

Class : 6 **Scheme Code : 40** **Sessional : 275**

Subject Code	Type	Marks	Subject Name
5334	T	75	PRODUCTION MANAGEMENT
5336	T	75	MACHINE DESIGN
5355	T	75	AUTOMOBILE ENGINEERING
5380	T	75	CNC MACHINES AND AUTOMATION
5359	P	50	AUTOMOBILE ENGINEERING
5390	P	50	CNC MACHINES AND AUTOMATION
5399	P	100	PROJECT WORK

Course Name: A M (0093) Dip. ME-3rd **Year of study 2021-2022**

Course Outcomes After the course completion, students will be able to:	
0093.1:	Interpret various types of units and their conversion from one to another
0093.2:	Analyze different types of forces acting on a body and draw free body diagrams
0093.3:	Determine the resultant of coplanar concurrent forces.
0093.4:	Calculate the co-efficient of friction for different types of surfaces.
0093.5:	Calculate the least force required to maintain equilibrium on an inclined plane
0093.6:	Determine the centroid/centre of gravity of plain and composite laminar and solid bodies.
0093.7:	Determine velocity ratio, mechanical advantage and efficiency of simple machines

Course Name: EEEE (0193) (Dip. ME-3rd) Year of study 2021-2022

Course Outcomes **After the course completion, students will be able to:**	
0193.1	Measure basic electrical quantities
0193.2	Measure and improve power factor in a given circuit
0193.3	Explain the construction, working principle, performance and applications of transformers.
0193.4	Identify different wires of distribution system.
0193.5	Select and operate single phase and three phase motors.
0193.6	Follow electrical safety measures
0193.7	Describe the characteristics and applications of diodes, transistors and thyristor.

Course Name: W .T**(**0593) (Dip ME 3rd) ` Year of study 2021-2022

Course Outcomes **After the course completion, students will be able to:**	
0593.1	Fabricate welding joints using gas welding arc welding, TIG, MIG/MAG weldingof mild steel and stainless steel materials.
0593.2	Select suitable (most appropriate) process electrodes, various parameters ofprocess for given job
0593.3	Explain principle of operations of modern welding processes
0593.4	Inspect various welding joints, castings, forgings.
0593.5	Prepare pattern for given job.
0593.6	Select material and type of patterns, cores
0593.7	Prepare sand moulds manually and on machine
0593.8	Select type of moulding sand, adhesives, compact, strength and parameters of sand for given job.

0593.9	Cast a mould.
0593.10	Identify a suitable furnace, alloying elements
0593.11	Carry out deburring of castings.
0593.12	Test the properties of moulding sand (permeability, Strength, refractoriness, adhesiveness, cohesiveness)
0593.13	Operate forging machine, press, spinning machine.
0593.14	Explain the principle of rolling, extrusion and drawing process.

Course Name: E .M (3053) **(Dip. ME 3rd)** ` **Year of study 2021-2022**

Course Outcomes **After the course completion, students will be able to:**	
3053.1	Distinguish between metals and non metals and ferrous and non ferrous materials.
3053.2	Analyze microstructure and changes in microstructure due to heat treatment.
3053.3	Carryout various heat treatment processes such as annealing, normalizing. tempering and hardening
3053.4	Draw and interpret iron-carbon diagram.
3053.5	Classify various types of plastics and rubber
3053.6	Explain properties and applications of composites, ceramics and smart materials
3053.7	Select suitable material to be used for various engineering applications

Course Name : M & I **(4653) (Dip. ME 3rd)** **Year of study 2021-2022**

Course Outcomes **After the course completion, students will be able to:**	
4653.1	Use vernier calliper, micrometer, Height gauge for linear internal and external measurement
4653.2	Use bore gauge, radius gauge, taper gauge, plug gauge, ring gauge, snap gauge for measurements.
4653.3	Use bevel protector, sine bar, slip gauge, dial indictor, angle deckor, poppy dial for angular measurements
4653.4	Measure spur gear characteristics using gear tooth vernier, outside diameter over dovel pins.
4653.5	. Use tool makers microscope

4653.6	Measure surface roughness parameters.
4653.7	Use profile projector, auto collimeter, angle deckor.
4653.8	Select and measure variables using electrical and electronics comparators and measuring instrument, sensors, transducers
4653.9	Select and use non destructive testing methods
4653.10	Explain the use of coordinate measuring machine.

Course Name: MED-I (9053) (Dip. ME-3rd) Year of study 2021-2022

Course Outcomes After the course completion, students will be able to:	
9053.1	Interpret different limits and fits of components
9053.2	Draw intersection of cylinders and their profile
9053.3	Draw different kind of machine components like bearings, brackets, pulleys, pipe joints and lathe tool holder.
9053.4	Draw electrical circuit diagram of simple household electrical circuits and home appliances
9053.5	Read and interpret drawings of mechanical components

Course Name:: AM (1093) Dip. ME-3rd Year of study 2021-2022

Course Outcomes After the course completion, students will be able to:	
1093.1	Interpret various types of units and their conversion from one to another.
1093.2	Analyze different types of forces acting on a body and draw free body diagrams
1093.3	Determine the resultant of coplanar concurrent forces.
1093.4	Calculate the co-efficient of friction for different types of surfaces
1093.5	Calculate the least force required to maintain equilibrium on an inclined plane.
1093.6	Determine the centroid/centre of gravity of plain and composite laminar and solid bodies.

1093.7	Determine velocity ratio, mechanical advantage and efficiency of simple machines

Course Name: EEEE Lab(1193) (Dip. ME 3rd) ` **Year of study 2021-2022**

Course Outcomes **After the course completion, students will be able to:**	
1193.1	Measure basic electrical quantities
1193.2	Measure and improve power factor in a given circuit
1193.3	Explain the construction, working principle, performance and applications of transformers.
1193.4	Identify different wires of distribution system.
1193.5	Select and operate single phase and three phase motors.
1193.6	Follow electrical safety measures
1193.7	Describe the characteristics and applications of diodes, transistors and thyristor.

Course Name: W.T.I Lab (1593) (Dip. ME 3rd) **Year of study 2021-2022**

Course Outcomes **After the course completion, students will be able to:**	
1593.1	Fabricate welding joints using gas welding arc welding, TIG, MIG/MAG weldingof mild steel and stainless steel materials.
1593.2	Select suitable (most appropriate) process electrodes, various parameters ofprocess for given job
1593.3	Explain principle of operations of modern welding processes
1593.4	Inspect various welding joints, castings, forgings.
1593.5	Prepare pattern for given job.
1593.6	Select material and type of patterns, cores
1593.7	Prepare sand moulds manually and on machine
1593.8	Select type of moulding sand, adhesives, compact, strength and parameters of sand for given job.
1593.9	Cast a mould.

1593.10	Identify a suitable furnace, alloying elements
1593.11	Carry out de burring of castings.
1593.12	Test the properties of moulding sand (permeability, Strength, refractoriness, adhesiveness, cohesiveness)
1593.13	Operate forging machine, press, spinning machine.
1593.14	Explain the principle of rolling, extrusion and drawing process.

Course Name: M&I Lab (6653) **(Dip. ME 3rd)** **Year of study 2021-2022**

Course Outcomes **After the course completion, students will be able to:**	
6653.1	Use vernier calliper, micrometer, Height gauge for linear internal and external measurement
6653.2	Use bore gauge, radius gauge, taper gauge, plug gauge, ring gauge, snap gauge for measurements.
6653.3	Use bevel protector, sine bar, slip gauge, dial indictor, angle deckor, poppy dial for angular measurements
6653.4	Measure spur gear characteristics using gear tooth vernier, outside diameter over dovel pins.
6653.5	. Use tool makers microscope
6653.6	Measure surface roughness parameters.
6653.7	Use profile projector, auto collimeter, angle deckor.
6653.8	Select and measure variables using electrical and electronics comparators and measuring instrument, sensors, transducers
6653.9	Select and use non destructive testing methods
6653.10	Explain the use of coordinate measuring machine.

Course Name: E.M Lab (8053) Diploma ME-3rd **Year of study 2020-2021**

Course Outcomes **After the course completion, students will be able to:**	
8053.1	Distinguish between metals and non metals and ferrous and non ferrous materials.
8053.2	Analyze microstructure and changes in microstructure due to heat treatment.
8053.3	Carryout various heat treatment processes such as annealing, normalizing. tempering and hardening
8053.4	Draw and interpret iron-carbon diagram.

8053.5	Classify various types of plastics and rubber
8053.6	Explain properties and applications of composites, ceramics and smart materials
8053.7	Select suitable material to be used for various engineering applications

Course Name: GSE (9585) Dip. ME-4th **Year of study 2020-2021**

Course Outcomes **After the course completion, students will be able to:**	
0495.1	Explain the importance of generic skills.
0495.2	Demonstrate self development
0495.3,4	Manage himself/herself physically, intellectually and psychologically Work effectively as a team member
0495.5,6	Manage tasks effectively Apply knowledge to solve problems
0495.7,8	dentify entrepreneurial support system for new ventures and small businesses
0495.8,9	Recognize a business opportunity. Prepare project report

Name: H&P(4853) (Dip. ME 4th) **Year of study 2021-2022**

Course Outcomes **After the course completion, students will be able to:**	
2095.1	Explain fluid properties, their units and conversion.
2095.2	Measure different types of pressures
2095.3	Calculate flow and discharge of various liquids.
2095.4,5	Apply Bernoulli's theorem for calculating pipe diameter and height of pipe from ground. Calculate pipe friction and losses in pipelines.
2095.6,7	Specify hydraulic machines for different applications. Select maintain and resolve troubles in pumps.;
2095.8,9	Apply Pascal's law in practical applications. Maintain hydraulic and pneumatic system.

Course Name: SOM (2295) Dip ME-4th **Year of study 2021-2022**

Course Outcomes After the course completion, students will be able to:	
2295.1	Interpret various concepts and terms related to strength of materials
2295.2	Calculate stresses in thin cylindrical shells.
2295.3,4	Calculate energy stored by materials subjected to axial loads. Calculate moment of inertia of different sections
2295.5,6	Draw and calculate bending moment and shear force diagrams of beam under given loading Interpret the concept of bending and torsion and calculate stresses on different section of materials.
2295.7,8	Determine the diameter of a shaft under combined bending and torsion. Calculate critical axial loads on column under different end constraints.
2295.9,10	Determine the various parameters in closed coil helical and laminated springs Determine conformance of given materials sample to the prescribed Indian standards

Course Name: T.D 1(2395) (Dip. ME 4th) **Year of study 2021-2022**

Course Outcomes After the course completion, students will be able to:	
2395.1	Apply thermodynamic laws.
2395.2	Solve basic problems of gas equation using perfect gas laws.
2395.3	Determine enthalpy, specific heat capacity and P-V-T surface of an ideal and real gas
	Explain the working, construction and applications of steam boilers and steam generators
	Interpret different modes of heat transfer.

Course Name: MED II (2495) Dip. ME-4th **Year of study 2021-2022**

Course Outcomes After the course completion, students will be able to:	
2495.1	Interpret and draw the drawings of mechanical machine parts like jig, vices and screw jack
2495.2	Interpret and prepare the drawings of boiler and J.C. engine parts
2495.3	Interpret and draw different types of cams for different kinds of motions.
2495.4	Interpret gear terminology and draw spur gear teeth profile.

Course Name: W.T II (3095) (Dip. ME 4th) Year of study 2021-2022

Course Outcomes After the course completion, students will be able to:	
3095.1,2	Perform turning, step turning, taper turning, threading and knurling operation on lathe machine. Resharpen/grind single point tool.
3095.3,4	Select material and tool geometry for cutting tools on lathe. Perform drilling, reaming, counter boring, counter sinking and tapping operations on drilling machine..
3095.5,6	Explain the nomenclature of a drill Perform filing, cutting, Fitting and die tapping operations
3095.7,8,9	Perform keyway cutting and angular/step surface shaping on shaper. Explain geometry of single point tools, various types of lathe tools and tool materials. Explain uses of lathe accessories and different types of lathes
3095.10,11	Explain boring operation, features of boring machine and boring tool. Explain the uses and features of jigs, fixtures, locating devices and clamping devices. Select cutting fluid for different materials and operations;
	Describe the features of various types of broaching machines.

Course Name: TOM (5317) Dip ME-5th Year of study 2021-2022

Course Outcomes After the course completion, students will be able to:	
3295.1	Explain working of different types of mechanisms and draw their inversion.
3295.2	Determine the horizontal force required to move a body on an inclined plane and calculate the efficiency of screw jack.

3295.3	Solve problems on power transmission.
3295.4	Determine ratio of driving tension for flat and V-belt drive.
3295.5	Identify various types of gears and their applications.
3295.6	Construct turning moment diagram of flywheel for different types of engine.
3295.7	Explain working of different types of governors.
3295.8	Calculate balancing of rotating mass and its position.
3295.9	Identify different type of vibrations, their causes, harmful effect and remedies

Course Name: WT-III (5332) Diploma ME-5th Year of study 2020-2021

Course Outcomes After the course completion, students will be able to:	
3395.1	Perform boring, internal threading on lathe machine
3395.2	Perform milling machine operations on vertical and horizontal milling machine.
3395.3	Understand functions provided by database package.
3395.4	Perform exercises on commands like Grant, Revoke, Commit and Rollback etc.

Course Name: R.A.C (6853) Dip. ME-5th Year of study 2021-2022

Course Outcomes After the course completion, students will be able to:	
6853.1	Explain the working and construction features of refrigeration and air conditioning systems
6853.2	Draw and interpret various refrigeration cycles.
6853.3	Make basic calculation of psychometric properties and processes.
6853.4	Calculate heating and cooling load requirements of a room
6853.5	Explain latest developments in the field of refrigeration and air conditioning.
6853.6	Calculate the properties of air by using psychometric chart.
6853.7	Detect faults in an air-conditioner/refrigerator

6853.8	Carry out charging of air conditioner

Course Name: TD-II (6953) Diploma ME-5th **Year of study 2021-2022**

Course Outcomes After the course completion, students will be able to:	
6953.1	Explain the working of IC engine..
6953.2	Diagnose and rectify simple problems in fuel supply and ignition system
6953.3	Explain the functioning of different components of fuel supply of diesel engine.
6953.4	Explain the working of lubrication and cooling system in IC engine.
6953.5	Assist in testing an IC engine.
6953.6	Explain the functioning of steam turbine, gas turbine and jet propulsion.

Course Name: BOM (9520) DIP ME-5th **Year of study 2021-2022**

Course Outcomes After the course completion, students will be able to:	
9520.1	Understand the principles of management including its functions in an organisation, types of organizations and their structures, Inculcate leadership qualities to motivate self and others.
9520.2	Manage human resources at the shop-floor, Maintain and be a part of healthy work culture in an organisation.
9520.3	Use marketing skills for the benefit of organization, Maintain books of accounts and take financial decisions, Undertake store management, Use modern concepts like TQM, TPM and CRM.
9520.4	Distinguish and classify the forms of cybercriminal activity and the technological and 'social engineering' methods used to undertake such crimes
9520.5	Analyse and assess the impact of cybercrime on government, businesses, individuals and society.

Course Name: W.T-III LAB(5333) Dip ME-5th **Year of study 2021-2022**

Course Outcomes After the course completion, students will be able to:	
5333.1	Perform boring, internal threading on lathe machine

5333.2	Perform milling machine operations on vertical and horizontal milling machine.
5333.3	Operate tool and cutter grinder
5333.4	Operate cylindrical grinder, surface grinder, internal grinder.
5333.5	Use Milling machine accessories and attachments.
5333.6	Explain gear hobbing, gear shaping, gear shaving and gear finishing processes
5333.7	Explain the working and use of modern machining practices.
5333.8	Explain the working principle of metallic coating processes.
5333.9	Explain the working principle of metal finishing processes.

Course Name: CAD LAB (7353) Dip ME-5th **Year of study 2021-2022**

Course Outcomes **After the course completion, students will be able to:**	
7353.1	On completion of this course, students will be able to
7353.2	know the advantages of using CAD in comparison with conventional method
7353.3	draw and interpret CAD drawings using drawing, editing and viewing in CAD software.
7353.4	create easy and complex solids and assemblies using various tools in Solidworks software

Course Name: RAC LAB (9853) Dip ME-5th **Year of study 2021-2022**

Course Outcomes **After the course completion, students will be able to:**	
9853.1	Explain the working and construction features of refrigeration and air conditioning systems
9853.2	Draw and interpret various refrigeration cycles.
9853.3	Make basic calculation of psychometric properties and processes.
9853.4	Calculate heating and cooling load requirements of a room
9853.5	Explain latest developments in the field of refrigeration and air conditioning.
9853.6	Calculate the properties of air by using psychometric chart.

9853.7	Detect faults in an air-conditioner/refrigerator
9853.8	Carry out charging of air conditioner

Course Name: TD LAB (9953) Dip ME-5th **Year of study 2021-2022**

Course Outcomes **After the course completion, students will be able to:**	
9953.1	Explain the working of IC engine..
9953.2	Diagnose and rectify simple problems in fuel supply and ignition system
9953.3	Explain the functioning of different components of fuel supply of diesel engine.
9953.4	Explain the working of lubrication and cooling system in IC engine.
9953.5.	Assist in testing an IC engine.
9953.6	Explain the functioning of steam turbine, gas turbine and jet propulsion.

Course Name: P.M (5334) Dip ME-6th **Year of study 2021-2022**

Course Outcomes **After the course completion, students will be able to:**	
5334.1	Solve planning, scheduling and sequencing problems for shop floor
5334.2	Interpret different kinds of production systems
5334.3	Prepare break-even analysis and Gantt chart.
5334.4	Locate suitable plant location and draw plant layout for different production system.
5334.5	Handle different type of material and tools safely and effectively.
5334.6	Apply work study techniques for improving production
5334.7	Maintain inventory optimally and classify different types of inventory
5334.8	Use industrial engineering concepts to improve productivity
5334.9	Use resources optimally and economically

5334.10	Carryout estimating and costing of production cost
5334.11	Apply different techniques to improve quality of products and processes

Course Name: MD (5336) Dip ME-6th Year of study 2021-2022

Course Outcomes After the course completion, students will be able to:	
5336.1	Explain the terms related to design.
5336.2	Use codes and standards for designing a component.
5336.3	Select material for designing a component
5336.4	Interpret the various causes of design failures.
5336.5	Design shaft on the basis of strength and rigidity
5336.6	Design various machine elements (key, joint, flange coupling and screwed joints)

Course Name: AE (5355) Diploma ME-6th Year of study 2021-2022

Course Outcomes After the course completion, students will be able to:	
5355.1	identify and explain the function of different chassis components and drive types
5355.2	maintain transmission system
5355.3	carry out balancing of wheels to maintain steering geometry.
5355.4	carry out routine servicing of brake system and bleeding of hydraulic brakes
5355.5	carry out testing and charging of Lead-acid battery
5355.6	interpret Bharat norms of exhaust emissions.

Course Name: CNC (5380) Diploma ME-6th Year of study 2021-2022

Course Outcomes After the course completion, students will be able to:	
5380.1	Explain the construction and tooling of CNC machine
5380.2	Prepare simple part programme
5380.3	Operate a CNC lathe.
5380.4	Operate a CNC milling machine

5380.5	Diagnose common problems in CNC machines.
5380.6	Explain the trends in the field of automation.

Course Name: AE LAB (5359) Dip. ME 6th **Year of study 2021-2022**

Course Outcomes **After the course completion, students will be able to:**	
5359.1	identify and explain the function of different chassis components and drive types
5359.2	maintain transmission system
5359.3	carry out balancing of wheels to maintain steering geometry.
5359.4	carry out routine servicing of brake system and bleeding of hydraulic brakes
5359.5	carry out testing and charging of Lead-acid battery
5359.6	interpret Bharat norms of exhaust emissions.

Course Name: CNC LAB (5390) Dip. ME 6th **Year of study 2021-2022**

Course Outcomes **After the course completion, students will be able to:**	
5390.1	Explain the construction and tooling of CNC machine
5390.2	Prepare simple part programme
5390.3	Operate a CNC lathe.
5390.4	Operate a CNC milling machine
5390.5	Diagnose common problems in CNC machines.
5390.6	Explain the trends in the field of automation.