

Lesson Plan 2026-27 (Winter)

Discipline Mechanical Engg.	Semester: 3rd	Name of the Faculty- MS.TAPATI PANIGRAHY
Subject: Fluid Mechanics & Fluid Power Engineering-I (MEPC207)	No. of days/ week class Allotted class:03	Semester from date -01 .07.2026 To date 05.11.2026 No. of Weeks : 19
Weeks	CLASS DAYS	Theory
01 ST	1 ST	PROPERTIES OF A FLUID AND HYDROSTATICS: Definition of a fluid, classification of fluids
	2 ND	Various fluid properties such as density, specific weight, specific gravity
	3 RD	Viscosity and surface tension and state the units, fluid pressure, total pressure (hydrostatic force)
02 ND	1 ST	Location of centre of pressure on vertical, horizontal, inclined and curved surfaces by fluid
	2 ND	working of various measuring devices for pressure
	3 RD	
03 RD	1 ST	The principle of manometers of simple differential and inverted types
	2 ST	Principle of buoyancy and floatation. Simple numericals on Manometer
	3 RD	
04 TH	1 ST	KINEMATICS AND DYNAMICS OF FLUID MECHANICS Various types of flow, circulation and vorticity
	2 ND	stream-line, path line and streak-line, various energies of fluid,
	3 RD	Law of conservation of mass, energy equation -Bernoulli's theorem, the limitations of same-application of Bernoulli's equation
05 TH	1 ST	The working of venturimeter, pitot tube
	2 ND & 3 RD	Equation of flow rate and velocity with respect to venturimeter and pitot tube respectively
06 TH	1 ST	The working of flowmeter: current meter, Simple numericals
	2 ND & 3 RD	FLOW THROUGH ORIFICES AND NOTCHES, PIPES: Definition – orifice, orifice coefficient such as C_c , C_v , C_d , Relationship between orifice coefficients
07 TH	1 ST	Weir and notch, Discharge over rectangular notch and weir, triangular notch. Simple numericals.
	2 ND	
	3 RD	
08 TH	1 ST	Definition of a pipe. laws of fluid friction, Equation of loss of head through pipe due to friction
	2 ND	Darcy's formula and Chezy's formula, hydraulic gradient and total

		energy line,
	3 RD	Nozzle and its application,
09 TH	1 ST & 2ND	Power transmission through nozzle The condition of maximum power transmission through nozzle
	3RD	Expression for diameter of nozzle for maximum power transmission.
10 TH	1ST	Turbines and Pumps: Classification of hydraulic turbines, Selection of turbine on the basis of head and discharge available
	2ND	Construction and working principle of Pelton wheel, Francis and
	3RD	Kaplan turbines
11 TH	1ST	Draft tubes – types and construction, Concept of cavitation in turbines,
	2ND	Calculation of Work done, Power, efficiency of turbines. Simple numericals
	3RD	Centrifugal Pumps: Principle of working and applications, Types of casings and impellers
12 TH	1ST	Concept of multistage, Priming and its methods, Manometric head,
	2 ND	Work done, Manometric efficiency, Overall efficiency. Simple numericals
	3RD	Reciprocating Pumps: Construction, working principle and applications of single and doubleacting reciprocating pumps,
13 TH	1ST	Concept of Slip, Negative slip
	2ND	
	3RD	Cavitation and separation. Simple numericals
14 TH	1ST	FLUID POWER: Definition of fluid power
	2ND	Classification – hydraulic power and pneumatic power, Hydraulic Systems
	3RD	Basic principle of enclosed hydraulic system – Pascal's law
15 TH	1 ST	Oil hydraulic system – reservoir, filter pressure limiting valves, direction control valves
	2 ND & 3 RD	Flow control valves, actuators (linear and rotary), accumulator
16 TH	1 ST ,2 ND & 3 RD	Course review and discussions
17 TH	1 ST ,2 ND & 3 RD	Extra classes , doubt clearing class & Numerical solve
18 TH	1 ST ,2 ND & 3 RD	Extra classes , doubt clearing class & Numerical solve
19 TH	1 ST ,2 ND & 3 RD	Course review and discussions

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Lesson Plan 2026-27 (Winter)

Discipline Mechanical Engg.	Semester: 3rd	Name of the Faculty- MS.TAPATI PANIGRAHY
Subject: Thermal Engineering-I (MEPC209)	No. of days/ week class Allotted class:03	Semester from date -01 .07.2026 To date 05.11.2026 No. of Weeks : 19
Weeks	CLASS DAYS	Theory
01 ST	1 ST	Introduction to Thermodynamics: Thermodynamic Systems (closed, open, isolated)
	2 ND	Thermodynamic properties of a system (pressure, volume, temperature, entropy, enthalpy, Internal energy and units of measurement) ;
	3 RD	Intensive and extensive properties Define thermodynamic processes, path, cycle , state path function, point function
02 ND	1 ST	Thermodynamic Equilibrium ; Quasi-static Process
	2 ND	Laws of thermodynamics (statements only)
	3 RD	Sources of Energy Brief description of energy Sources: Classification of energy sources: Renewable, Non-Renewable
03 RD	1 ST	Fossil fuels (CNG & LPG) ; Solar Energy: Flat plate and concentrating collectors & its applications
	2 ST	working principles of Solar Water Heater, Photovoltaic Cell, Solar Distillation
	3 RD	Definitions of Wind Energy; Tidal Energy; Ocean Thermal Energy; Geothermal Energy
04 TH	1 ST	Biogas, Biomass, Biodiesel; Hydraulic Energy, Nuclear Energy; Fuel cell
	2 ND	Internal Combustion Engines Assumptions made in air standard cycle analysis; Brief description of Carnot, Otto and Diesel cycles with P-V and T-S diagrams
	3 RD	Internal and external combustion engines; advantages of I.C. engines over external combustion engines;
05 TH	1 ST	Classification of I.C. engines; neat sketch of I.C. engine indicating component parts
	2 ND & 3 RD	Function of each part and materials used for the component parts - Cylinder, crank case, crank pin , crank, crank shaft connecting rod, wrist pin, piston, cooling pins cylinder heads, exhaust valve, inlet valve
06 TH	1 ST	Working of four-stroke and two stroke petrol and diesel engines;
	2 ND & 3 RD	Working of four-stroke and two stroke diesel engines; Comparison of two stroke and four stroke engines Comparison of C.I. and S.I. engines
07 TH	1 ST	Valve timing and port timing diagrams for four stroke and two stroke engines.
	2 ND	I.C. Engine System Fuel system of Petrol engines; Principle of operation of simple and Zenith carburettors.
	3 RD	Fuel systems of Diesel engines & Types of injectors and fuel pumps

08 TH	1 ST	Cooling system: air cooling, water cooling system with thermo siphon method of circulation
	2 ND	Water cooling system with radiator and forced circulation (description with line diagram).
	3 RD	Comparison of air cooling and water cooling system
09 TH	1 ST & 2 ND	Ignition systems – Battery coil ignition and magneto ignition (description and working) Comparison of two systems; Types of lubricating systems used in I.C. engines with line diagram
	3 RD	Types of governing of I.C. engines – hit and miss method, quantitative method, qualitative method and combination methods of governing; their applications;
10 TH	1ST	Application of governing & objective of super charging
	2ND	Performance of I.C. Engines Brake power; Indicated power; Frictional power
	3RD	Brake and Indicated mean effective pressures
11 TH	1ST	Brake and Indicated thermal efficiencies
	2ND	Mechanical efficiency; Relative efficiency
	3RD	Performance test , Morse test
12 TH	1ST	Heat balance sheet.
	2 ND	Methods of determination of B.P., I.P. and F.P.
	3RD	Simple numerical problems on performance of I.C. engines
13 TH	1ST	Simple numerical problems on performance of I.C. engines
	2ND	Air Compressors Functions of air compressor; Uses of compressed air
	3RD	Types of air compressors; Single stage reciprocating air compressor
14 TH	1ST	construction and working (with line diagram) using P-V diagram; Multi stage compressors – Advantages over single stage compressors;.
	2ND	Rotary compressors: Centrifugal compressor, axial flow type compressor and vane type compressors
	3RD	Refrigeration & Air-conditioning: Refrigeration; Refrigerant; COP , Air Refrigeration system: components, working & applications
15 TH	1 ST	Vapour Compression system: components, working & applications
	2 ND & 3 RD	Air conditioning; Classification of Air-conditioning systems; Comfort and Industrial Air-Conditioning; Window Air Conditioner; Summer Air-Conditioning system, Winter Air-Conditioning system, Year-round Air-Conditioning system
16 TH	1 ST ,2 ND & 3 RD	Course review and discussions
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Lesson Plan 2026-27(Winter)

Discipline Mechanical Engg.	Semester: 3rd	Name of the Faculty- MS.TAPATI PANIGRAHY	
Subject:MANUFACTURING ENGG-I LAB (MEPC 211)	No. of days/ week class Allotted class:04	Semester from date -01.07.2026 No. of Weeks : 19	To date 05.11.2026 W.e.f: 01.07.2026
Weeks	CLASS DAYS	Practical	
01 ST	1ST	Moulding & casting of (i) Connecting rod (ii) Solid bearing (iii) V-Pulley/Gear Pulley	
	2ND	Moulding & casting of (i) Connecting rod (ii) Solid bearing (iii) V	
	3RD	Moulding & casting of (i) Connecting rod (ii) Solid bearing (iii) V	
	4 TH	Moulding & casting of (i) Connecting rod (ii) Solid bearing (iii) V	
02 ND	1ST	Arc welding (i) Lap Joint (ii) Butt Joint (iii) T- Joint	
	2ND	Arc welding (i) Lap Joint (ii) Butt Joint (iii) T- Joint	
	3RD	Arc welding (i) Lap Joint (ii) Butt Joint (iii) T- Joint	
	4 TH	Arc welding (i) Lap Joint (ii) Butt Joint (iii) T- Joint	
03 RD	1ST	Gas welding (i) Lap Joint (ii) Butt Joint	
	2ND	Gas welding (i) Lap Joint (ii) Butt Joint	
	3RD	Gas welding (i) Lap Joint (ii) Butt Joint	
	4 TH	Gas welding (i) Lap Joint (ii) Butt Joint	
04 TH	1ST	Spot welding (i) Lap Joint	
	2ND	Spot welding (i) Lap Joint	
	3RD	Spot welding (i) Lap Joint	
	4 TH	Spot welding (i) Lap Joint	
05 TH	1ST	Turning Exercise (i) Facing, Step Turning & Chamfering (ii) Step Turning & Taper Turning (iii) Step Turning & Groove Cutting (iv) Step Turning & & Knurling (v) Step Turning & Thread Cutting (vi) Turning and Drilling	
	2ND	Turning Exercise (i) Facing, Step Turning & Chamfering (ii) Step Turning & Taper Turning (iii) Step Turning & Groove Cutting (iv) Step Turning & & Knurling (v) Step Turning & Thread Cutting (vi) Turning and Drilling	
	3RD	Turning Exercise (i) Facing, Step Turning & Chamfering (ii) Step Turning & Taper Turning (iii) Step Turning & Groove Cutting (iv) Step Turning & & Knurling (v) Step Turning & Thread Cutting (vi) Turning and Drilling	
	4 TH	Turning Exercise (i) Facing, Step Turning & Chamfering (ii) Step Turning & Taper Turning (iii) Step Turning & Groove Cutting (iv) Step Turning & & Knurling (v) Step Turning & Thread Cutting	

		(vi) Turning and Drilling
06 TH	1ST	Grinding the Lathe Cutting tools to the required angles
	2ND	Grinding the Lathe Cutting tools to the required angles
	3RD	Grinding the Lathe Cutting tools to the required angles
	4 TH	Grinding the Lathe Cutting tools to the required angles
07 TH	1ST	Study of Lathe, Drilling machine, shaping machine and slotting machine
	2ND	Study of Lathe, Drilling machine, shaping machine and slotting machine
	3RD	Study of Lathe, Drilling machine, shaping machine and slotting machine
	4 TH	Study of Lathe, Drilling machine, shaping machine and slotting machine
08 TH	1ST	The dismantling some of the components of lathe and then assemble the same
	2ND	The dismantling some of the components of lathe and then assemble the same
	3RD	The dismantling some of the components of lathe and then assemble the same
	4 TH	The dismantling some of the components of lathe and then assemble the same
09 TH	1ST	List the faults associated with lathe and its remedies
	2ND	List the faults associated with lathe and its remedies
	3RD	List the faults associated with lathe and its remedies
	4 TH	List the faults associated with lathe and its remedies
10 TH	1ST	The routine and preventive maintenance procedure for lathe
	2ND	The routine and preventive maintenance procedure for lathe
	3RD	The routine and preventive maintenance procedure for lathe
	4 TH	The routine and preventive maintenance procedure for lathe
11 TH	1ST	LAB PRACTICE AND REVISION
	2ND	LAB PRACTICE AND REVISION
	3RD	LAB PRACTICE AND REVISION
	4 TH	LAB PRACTICE AND REVISION
12 TH	1ST	LAB PRACTICE AND REVISION
	2ND	LAB PRACTICE AND REVISION
	3RD	LAB PRACTICE AND REVISION
	4 TH	LAB PRACTICE AND REVISION
13 TH	1ST	LAB PRACTICE AND REVISION
	2ND	LAB PRACTICE AND REVISION
	3RD	LAB PRACTICE AND REVISION

	4 TH	LAB PRACTICE AND REVISION
14 TH	1ST	LAB PRACTICE AND REVISION
	2ND	LAB PRACTICE AND REVISION
	3RD	LAB PRACTICE AND REVISION
	4 TH	LAB PRACTICE AND REVISION
15 TH	1ST	LAB PRACTICE AND REVISION
	2ND	LAB PRACTICE AND REVISION
	3RD	LAB PRACTICE AND REVISION
	4 TH	LAB PRACTICE AND REVISION
16 TH	1ST	LAB PRACTICE AND REVISION
	2ND	LAB PRACTICE AND REVISION
	3RD	LAB PRACTICE AND REVISION
	4 TH	LAB PRACTICE AND REVISION
17 TH	1ST	LAB PRACTICE AND REVISION
	2ND	LAB PRACTICE AND REVISION
	3RD	LAB PRACTICE AND REVISION
	4 TH	LAB PRACTICE AND REVISION
18 TH	1ST	LAB PRACTICE AND REVISION
	2ND	LAB PRACTICE AND REVISION
	3RD	LAB PRACTICE AND REVISION
	4 TH	LAB PRACTICE AND REVISION
19 TH	1ST	LAB PRACTICE AND REVISION
	2ND	LAB PRACTICE AND REVISION
	3RD	LAB PRACTICE AND REVISION
	4 TH	LAB PRACTICE AND REVISION

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Lesson Plan 2026-27(Winter)

Discipline Mechanical Engg.	Semester: 3rd	Name of the Faculty- MS.TAPATI PANIGRAHY	
Subject: FM&FP LAB (MEPC 215)	No. of days/ week class Allotted class:04	Semester from date -01.07.2026 No. of Weeks : 19	To date 05.11.2026 W.e.f: 01.07.2026(19 Weeks)
Weeks	CLASS DAYS	Practical	
01 ST	1ST	VERIFICATION OF BERNOULLI'S THEOREM	
	2ND	VERIFICATION OF BERNOULLI'S THEOREM	
	3RD	VERIFICATION OF BERNOULLI'S THEOREM	
	4 TH	VERIFICATION OF BERNOULLI'S THEOREM	
02 ND	1ST	DETERMINATION OF COEFFICIENT OF DISCHARGE OF VENTURI METER	
	2ND	DETERMINATION OF COEFFICIENT OF DISCHARGE OF VENTURI METER	
	3RD	DETERMINATION OF COEFFICIENT OF DISCHARGE OF VENTURI METER	
	4 TH	DETERMINATION OF COEFFICIENT OF DISCHARGE OF VENTURI METER	
03 RD	1ST	DETERMINATION OF COEFFICIENT OF DISCHARGE, COEFFICIENT OF CONTRACTION AND COEFFICIENT OF VELOCITY OF ORIFICE METER	
	2ND	DETERMINATION OF COEFFICIENT OF DISCHARGE, COEFFICIENT OF CONTRACTION AND COEFFICIENT OF VELOCITY OF ORIFICE METER	
	3RD	DETERMINATION OF COEFFICIENT OF DISCHARGE, COEFFICIENT OF CONTRACTION AND COEFFICIENT OF VELOCITY OF ORIFICE METER	
	4 TH	DETERMINATION OF COEFFICIENT OF DISCHARGE, COEFFICIENT OF CONTRACTION AND COEFFICIENT OF VELOCITY OF ORIFICE METER	
04 TH	1ST	DETERMINATION OF COEFFICIENT OF FRICTION OF FLOW THROUGH PIPES	
	2ND	DETERMINATION OF COEFFICIENT OF FRICTION OF FLOW THROUGH PIPES	
	3RD	DETERMINATION OF COEFFICIENT OF FRICTION OF FLOW THROUGH PIPES	
	4 TH	DETERMINATION OF COEFFICIENT OF FRICTION OF FLOW THROUGH PIPES	
05 TH	1ST	DETERMINATION OF FORCE EXERTED BY THE JET OF WATER ON THE GIVEN VANE	
	2ND	DETERMINATION OF FORCE EXERTED BY THE JET OF WATER ON THE GIVEN VANE	
	3RD	DETERMINATION OF FORCE EXERTED BY THE JET OF WATER ON THE GIVEN VANE	
	4 TH	DETERMINATION OF FORCE EXERTED BY THE JET OF WATER ON THE GIVEN VANE	
06 TH	1ST	DETERMINATION OF MINOR LOSSES OF FLOW THROUGH PIPES	
	2ND	DETERMINATION OF MINOR LOSSES OF FLOW THROUGH PIPES	
	3RD	DETERMINATION OF MINOR LOSSES OF FLOW THROUGH PIPES	

	4 TH	DETERMINATION OF MINOR LOSSES OF FLOW THROUGH PIPES
07 TH	1ST	CALIBRATION OF PRESSURE GAUGE USING DEAD WEIGHT PRESSURE GAUGE TESTER
	2ND	CALIBRATION OF PRESSURE GAUGE USING DEAD WEIGHT PRESSURE GAUGE TESTER
	3RD	CALIBRATION OF PRESSURE GAUGE USING DEAD WEIGHT PRESSURE GAUGE TESTER
	4 TH	CALIBRATION OF PRESSURE GAUGE USING DEAD WEIGHT PRESSURE GAUGE TESTER
08 TH	1ST	TRIAL ON CENTRIFUGAL PUMP TO DETERMINE OVERALL EFFICIENCY
	2ND	TRIAL ON CENTRIFUGAL PUMP TO DETERMINE OVERALL EFFICIENCY
	3RD	TRIAL ON CENTRIFUGAL PUMP TO DETERMINE OVERALL EFFICIENCY
	4 TH	TRIAL ON CENTRIFUGAL PUMP TO DETERMINE OVERALL EFFICIENCY
09 TH	1ST	TRIAL ON RECIPROCATING PUMP TO DETERMINE OVERALL EFFICIENCY
	2ND	TRIAL ON RECIPROCATING PUMP TO DETERMINE OVERALL EFFICIENCY
	3RD	TRIAL ON RECIPROCATING PUMP TO DETERMINE OVERALL EFFICIENCY
	4 TH	TRIAL ON RECIPROCATING PUMP TO DETERMINE OVERALL EFFICIENCY
10 TH	1ST	TRIAL ON PELTON WHEEL /FRANCIS/KAPLAN TURBINE TO DETERMINE OVERALL EFFICIENCY
	2ND	TRIAL ON PELTON WHEEL /FRANCIS/KAPLAN TURBINE TO DETERMINE OVERALL EFFICIENCY
	3RD	TRIAL ON PELTON WHEEL /FRANCIS/KAPLAN TURBINE TO DETERMINE OVERALL EFFICIENCY
	4 TH	TRIAL ON PELTON WHEEL /FRANCIS/KAPLAN TURBINE TO DETERMINE OVERALL EFFICIENCY
11 TH	1ST	ANALYSIS OF HYDRAULIC CIRCUITS IN A HYDRAULIC TRAINER
	2ND	ANALYSIS OF HYDRAULIC CIRCUITS IN A HYDRAULIC TRAINER
	3RD	ANALYSIS OF HYDRAULIC CIRCUITS IN A HYDRAULIC TRAINER
	4 TH	ANALYSIS OF HYDRAULIC CIRCUITS IN A HYDRAULIC TRAINER
12 TH	1ST	ANALYSIS OF PNEUMATIC CIRCUITS IN A PNEUMATIC TRAINER
	2ND	ANALYSIS OF PNEUMATIC CIRCUITS IN A PNEUMATIC TRAINER
	3RD	ANALYSIS OF PNEUMATIC CIRCUITS IN A PNEUMATIC TRAINER
	4 TH	ANALYSIS OF PNEUMATIC CIRCUITS IN A PNEUMATIC TRAINER
13 TH	1ST	LAB PRACTICE AND REVISION
	2ND	LAB PRACTICE AND REVISION
	3RD	LAB PRACTICE AND REVISION
	4 TH	LAB PRACTICE AND REVISION

14 TH	1ST	LAB PRACTICE AND REVISION
	2ND	LAB PRACTICE AND REVISION
	3RD	LAB PRACTICE AND REVISION
	4 TH	LAB PRACTICE AND REVISION
15 TH	1ST	LAB PRACTICE AND REVISION
	2ND	LAB PRACTICE AND REVISION
	3RD	LAB PRACTICE AND REVISION
	4 TH	LAB PRACTICE AND REVISION
16 TH	1ST	LAB PRACTICE AND REVISION
	2ND	LAB PRACTICE AND REVISION
	3RD	LAB PRACTICE AND REVISION
	4 TH	LAB PRACTICE AND REVISION
17 TH	1ST	LAB PRACTICE AND REVISION
	2ND	LAB PRACTICE AND REVISION
	3RD	LAB PRACTICE AND REVISION
	4 TH	LAB PRACTICE AND REVISION
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	2ND	LAB PRACTICE AND REVISION
	3RD	LAB PRACTICE AND REVISION
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	3RD	LAB PRACTICE AND REVISION
	4 TH	LAB PRACTICE AND REVISION


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