

Course Plan



Dr. Khandkar Aftab Hossain
Professor
Department of Mechanical Engineering

Session 2020-21

ME 4113

Fluid Machinery

Core Course Cr: 3.0

	Chapter	Description of Course Materials	Lectures	Remarks	
1	Chapter	Reciprocating Pump	Types of pumps, Defination of Reciprocating pump, Schematic Diagram of reciprocating pump, Different Components of Reciproating pumps.	1	
			Air Vessel, Functions of air vessel, Purpose of air vessel, Classification of Reciprocating pump.Applications of Reciprocating pump, Cavitation.	1	
			Advantages of Reciprocating pump, Disadvantages of Reciprocating pump, Working principle of Reciprocating pump, Slip and Negative Slip.	1	
			Pressure variation due to Acceleration of Piston, Expression for acceleration Head of water in suction and delivery pipes if the motion is harmonic and not harmonic motion. Ideal Indicator Diagram.	1	
			Work done against friction, Pressure variaition in suction and delivery pipes, Shortcomings of Reciprocating Pump, Reduction of Acceleration by Fitting an air vessel, Characteristics curve.	1	
			Work saved by fitting air vessel for single acting and double acting Reciprocating pump, Solution of Problem, Vedio.	1	6
2	Chapter	Centrifugal Pump	Defination of Centrifugal pump, Difference between Centrifugal pump and Reciprocating pump, Classification of Centrifugal pump and Components of Centrifugal pump.	1	
			Working principle of Centrifugal pump, Lifting Mechanism of liquid and Impeller types, Priming.	1	
			Advantages and Disadvantages of Centrifugal pump, Applications, Pressure developed by Impeller, Manometric Head.	1	
			Energy Transferred by the Impeller and its derivation. Effect of Outlet Blade Angle.	1	
			Pump Characteristics Curve, Specific speed, Model test.	1	
			Minimum Starting Speed, Least Diameter of Centrifugal pump, NPSH, Cavitation, Thomas Cavitation factor, Effect of Outlet Vane Angle on Manometric Efficiency.	1	
			Troubles and it's Remedies of Centrifugal	1	
			Solution of problems and vedio	1	8

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3	Chapter	Hydraulic Turbine	Definition of Hydraulic turbine and it's Classification.	1	
			Efficiencies of Turbine and euler equation of Turbine.	1	
			Components of Power Produced by the hydraulic Turbine.	1	
			Differences between turbines, Reaction turbine, work done, Hydraulic Efficiency and Blade Efficiency.	1	
			Classification of Turbines, Impulse Turbine, Velocity Vectors, Work Done and Efficiencies.	1	
			Draft Tube, Classifications, Theory of Draft Tube, Efficiency.	1	
			Cavitation of Turbine and Governing of Turbine, Solutin of Problem and Video.	1	
			Solution of problems and vedio	1	8
4	Chapter	Blower and Compressor	Working principle of blower, classification and Applications of blower.	1	
			Working principle of Compressor, classification and Applications of Compressor.	1	2
5	Class Tests		First Class test will be held based on Syllabus Reciprocating Pump and Centrifugal Pump.	1	
			Second Class test will be held based on syllabus Hydraulic Turbine, Blower and Compressor.	1	
				Total=	2

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