SSB REGIONAL INSTITUTE OF SCIENCE AND TECHNOLOGY, CHITRADA, MAYURBHANJ					
LESSON PLAN					
BRANCH: MECHANICAL ENGINEERING				SESSION: SUMMER-2024	SEMESTER: 4TH
NAME OF FACULTY:- ER. BHAGBAN MURMU				SUBJECT: FLUID MECHANICS	
NO OF CLASSES/WEEK GIVEN AS PER SYLLABUS=				DATE OF SEMESTER STARTING	DATE OF SEMESTER CLOSING
NO OF CLASSES/WEEK GIVEN AS PER TIME TABLE=				TOTAL NOS. OF WORKING DAYS AS PER SCTE&VT:	
SL. NO.	CHAPTER	NAME OF TOPIC	AS PER SYLLABUS NUMBER OF CLASSES ALLOTTED	AS PER PLAN NO. OF CLASSES REQUIRED TO COMPLETE	DETAILS CONTENT OF THIS CHAPTER
1	1	Properties Of Fluid	8	8	1.1 Define fluid 1.2 Description of fluid properties like Density, Specific weight, specific gravity, specific volume and solve simple problems. 1.3 Definitions and Units of Dynamic viscosity, kinematic viscosity, surface tension Capillary phenomenon
2	2	Fluid Pressure and its measurements	8	8	2.1 Definitions and units of fluid pressure, pressure intensity and pressure head. 2.2 Statement of Pascal's Law. 2.3 Concept of atmospheric pressure, gauge pressure, vacuum pressure and absolute pressure 2.4 Pressure measuring instruments Manometers (Simple and Differential) 2.4.1 Bourdon tube pressure gauge(Simple Numerical) 2.5 Solve simple problems on Manometer.
3	3	Hydrostatics	8	8	3.1 Definition of hydrostatic pressure 3.2 Total pressure and centre of pressure on immersed bodies(Horizontal and Vertical Bodies) 3.3 Solve Simple problems. 3.4 Archimedes 'principle, concept of buoyancy, meta center and meta centric height (Definition only) 3.5 Concept of floatation

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4	4	Kinematics of Flow	8	8	4.1 Types of fluid flow 4.2 Continuity equation(Statement and proof for one dimensional flow) 4.3 Bernoulli's theorem(Statement and proof) Applications and limitations of Bernoulli's theorem (Venturimeter, pitot tube) 4.4 Solve simple problems	
5	5	Orifices, notches & weirs	8	8	5.1 Define orifice 5.2 Flow through orifice 5.3Orifices coefficient & the relation between the orifice coefficients 5.4 Classifications of notches & weirs 5.5 Discharge over a rectangular notch or weir 5.6 Discharge over a triangular notch or weir 5.7 Simple problems on above	
6	6	Flow through pipe	10	10	6.1 Definition of pipe. 6.2 Loss of energy in pipes. 6.3 Head loss due to friction: Darcy's and Chezy's formula (Expression only) 6.4 Solve Problems using Darcy's and Chezy's formula. 6.5 Hydraulic gradient and total gradient line	
7	7	Impact of jets	10	10	7.1 Impact of jet on fixed and moving vertical flat plates 7.2 Derivation of work done on series of vanes and condition for maximum efficiency. 7.3 Impact of jet on moving curved vanes, illustration using velocity triangles, derivation of work done, efficiency.	

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NAME OF FACULTY:-ER. SIBUN KUMAR NAIK					SUBJECT: MANUFACTURING TECHNOLOGY	
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1	1	Tool Materials	4	4	1.1 Composition of various tool materials 1.2 Physical properties& uses of such tool materials.	
2	2	Cutting Tools	6	6	2.1 Cutting action of various and tools such as Chisel, hacksaw blade, dies and reamer 2.2 Turning tool geometry and purpose of tool angle 2.3 Machining process parameters (Speed, feed and depth of cut) 2.4 Coolants and lubricants in machining and purpose	
3	3	Lathe Machine	8	8	3.1 Construction and working of lathe and CNC lathe 3.1.1 Major components of a lathe and their function 3.1.2Operations carried out in a lathe(Turning, thread cutting, taper turning, internal machining, parting off, facing, knurling) 3.1.3 Safety measures during machining 3.2 Capstan lathe 3.2.1 Difference with respect to engine lathe 3.2.2 Major components and their function 3.2.3 Define multiple tool holders 3.3 Turret Lathe 3.3.1 Difference with respect to capstan lathe 3.3.2 Major components and their function 3.4 Draw the tooling layout for preparation of a hexagonal bolt &bush	

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4	4	Shaper	6	6	4.1 Potential application areas of a shaper machine 4.2 Major components and their function 4.3 Explain the automatic able feed mechanism 4.4 Explain the construction &working of tool head 4.5 Explain the quick return mechanism through sketch 4.6 State the specification of a shaping machine.	
5	5	Planning Machine	6	6	5.1 Application area of a planer and its difference with respect to shaper 5.2 Major components and their functions 5.3 The table drive mechanism 5.4 Working of tool and tool support 5.5 Clamping of work through sketch.	
6	6	Milling Machine	8	8	6.1 Types of milling machine and operations performed by them and also same for CNC milling machine 6.2 Explain work holding attachment 6.3 Construction & working of simple dividing head, universal dividing head 6.4 Procedure of simple and compound indexing 6.5 Illustration of different indexing methods	
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7	7	Slotter	6	6	7.1 Major components and their function 7.2 Construction and working of slotter machine 7.3 Tools used in slotter
8	8	Grinding	6	6	8.1 Significance of grinding operations 8.2 Manufacturing of grinding wheels 8.3 Criteria for selecting of grinding wheels 8.4 Specification of grinding wheels with example Working of 8.4.1Cylindrical Grinder 8.4.2 Surface Grinder 8.4.3 Centreless Grinder
9	9	Internal Machining Operations	6	6	Classification of drilling machines 9.1 Working of 9.1.1 Bench drilling machine 9.1.2 Pillar drilling machine 9.1.3 Radial drilling machine 9.2 Boring 9.2.1 Basic Principle of Boring 9.2.2 Different between Boring and drilling 9.3 Broaching 9.3.1 Types of Broaching(pull type, push type) 9.3.2 Advantages of Broaching and applications
10	10	Surface Finish, Lapping	4	4	10.1 Definition of Surface finish 10.2 Description of lapping& explain their specific cutting.

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BRANCH: MECHANICAL ENGINEERING					SESSION: SUMMER-2024	SEMESTER: 4TH
NAME OF FACULTY:-ER. DIBYAJYOTI DAS					SUBJECT: THEORY OF MACHINE	
NO OF CLASSES/WEEK GIVEN AS PER SYLLABUS= 06					DATE OF SEMESTER STARTING 16-1-2024	DATE OF SEMESTER CLOSING
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1	1	Simple Mechanism	8	8	1.1 Link ,kinematic chain, mechanism, machine 1.2 Inversion, four bar link mechanism and its inversion 1.3 Lower pair and higher pair 1.4 Cam and followers	
2	2	Friction	12	12	2.1 Friction between nut and screw for square thread, screw jack 2.2 Bearing and its classification, Description of roller, needle roller& ball bearings. 2.3 Torque transmission in flat pivot& conical pivot bearings. 2.4 Flat collar bearing of single and multiple types. 2.5 Torque transmission for single and multiple clutches 2.6 Working of simple frictional brakes. 2.7 Working of Absorption type of dynamometer	
3	3	Power Transmission	12	12	3.1 Concept of power transmission 3.2 Type of drives, belt, gear and chain drive. 3.3 Computation of velocity ratio, length of belts (open and cross)with and without slip. 3.4 Ratio of belt tensions, centrifugal tension and initial tension. 3.5 Power transmitted by the belt. 3.6 Determine belt thickness and width for given permissible stress for open and crossed belt considering centrifugal tension. 3.7 V-belts and V-belts pulleys. 3.8 Concept of crowning of pulleys. 3.9 Gear drives and its terminology. 3.10 Gear trains, working principle of simple, compound, reverted and epicyclic gear trains.	

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4	4	Governor & Flywheel	12	12	4.1 Function of governor 4.2 Classification of governor 4.3 Working of Watt, Porter, Proel and Hartnell governors. 4.4 Conceptual explanation of sensitivity, stability and isochronisms. 4.5 Function of flywheel. 4.6 Comparison between flywheel &governor. 4.7 Fluctuation of energy and coefficient of fluctuation of speed.	
5	5	Balancing Of Machine	8	8	5.1 Concept of static and dynamic balancing. 5.2 Static balancing of rotating parts. 5.3 Principles of balancing of reciprocating parts. 5.4 Causes and effect of unbalance. 5.5 Difference between static and dynamic balancing	
6	6	Vibration Of Machine Parts	8	8	6.1 Introduction to Vibration and related terms (Amplitude, time period and frequency, cycle) 6.2 Classification of vibration. 6.3 Basic concept of natural, forced & damped vibration 6.4 Torsional and Longitudinal vibration. 6.5 Causes & remedies of vibration.	

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NAME OF FACULTY:-ER. KRUSHNA PRASAD BERA				SUBJECT: THERMAL ENGINEERING-II	
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1	1	Performance of I.C engine	8	8	1.1 Define mechanical efficiency, Indicated thermal efficiency, Relative Efficiency, brake thermal efficiency overall efficiency Mean effective pressure &specific fuel consumption. 1.2 Define air-fuel ratio & calorific value of fuel. 1.3 Work out problems to determine efficiencies & specific fuel consumption.
2	2	Air Compressor	12	12	2.1 Explain functions of compressor & industrial use of compressor air 2.2 Classify air compressor & principle of operation. 2.3 Describe the parts and working principle of reciprocating Air compressor. 2.4 Explain the terminology of reciprocating compressor such as bore, stroke, pressure ratio free air delivered &Volumetric efficiency. 2.5 Derive the work done of single stage & two stage compressor with and without clearance. 2.6 Solve simple problems (without clearance only)
3	3	Properties of Steam	12	12	3.1 Difference between gas & vapours. 3.2 Formation of steam. 3.3 Representation on P-V, T-S, H-S, & T-H diagram. 3.4 Definition & Properties of Steam. 3.5 Use of steam table & mollier chart for finding unknown properties. 3.6 Non flow & flow process of vapour. 3.7 P-V, T-S & H-S, diagram. 3.8 Determine the changes in properties & solve simple numerical

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4	4	Steam Generator	12	12	4.1 Classification & types of Boiler. 4.2 Important terms for Boiler. 4.3 Comparison between fire tube & Water tube Boiler. 4.4 Description & working of common boilers (Cochran, Lancashire, Babcock & Wilcox Boiler) 4.5 Boiler Draught (Forced, induced & balanced) 4.6 Boiler mountings & accessories.
5	5	Vapour Power Cycle	8	8	5.1 Carnot cycle with vapour. 5.2 Derive work & efficiency of the cycle. 5.3 Rankine cycle. 5.3.1 Representation in P-V, T-S & h-s diagram. 5.3.2 Derive Work & Efficiency. 5.3.3 Effect of Various end conditions in Rankine cycle. 5.3.4 Reheat cycle & regenerative Cycle. 5.4 Solve simple numerical on Carnot vapour Cycle & Rankine Cycle
6	6	Heat Transfer	8	8	6.1 Modes of Heat Transfer (Conduction, Convection, Radiation). 6.2 Fourier law of heat conduction and thermal conductivity (k). 6.3 Newton's laws of cooling. 6.4 Radiation heat transfer (Stefan, Boltzmann & Kirchhoff's law) only statement, no derivation & no numerical problem. 6.5 Black body Radiation, Definition of Emissivity, absorptivity, & transmissibility

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