

<b>Discipline</b> MECHANICAL ENGG.	<b>Semester:4<sup>th</sup></b> (SUMMER-2025)	<b>Name of the Faculty:</b> Mrs Sabitarani Sahoo Senior Lecturer, Mechanical Engg.
<b>Subject:</b> TH 1 - THEORY OF MACHINES	<b>No. of days/per</b> <b>week class</b> <b>allotted:</b> (4 P/W)	<b>Semester from Date: 04.02.2025 to</b> <b>Date: 17.05.2025</b> <b>No. of weeks: 15</b>
<b>Week</b>	<b>Class Day</b>	<b>Theory Topics:</b>
<b>1<sup>st</sup></b>	<b>1<sup>st</sup></b>	<b>Simple mechanism :</b> Link ,kinematic chain, mechanism, machine
	<b>2<sup>nd</sup></b>	Inversion, four bar link mechanism and its inversion
<b>2<sup>nd</sup></b>	<b>1<sup>st</sup></b>	Lower pair and higher pair
	<b>2<sup>nd</sup></b>	Cam and followers
	<b>3<sup>rd</sup></b>	<b>Friction :</b> Friction between nut and screw for square thread, screw jack
	<b>4<sup>th</sup></b>	Bearing and its classification, Description of roller, needle roller& ball bearings.
<b>3<sup>rd</sup></b>	<b>1<sup>st</sup></b>	Torque transmission in flat pivot& conical pivot bearings.
	<b>2<sup>nd</sup></b>	Flat collar bearing of single and multiple types.
	<b>3<sup>rd</sup></b>	Torque transmission for single and multiple clutches
<b>4<sup>th</sup></b>	<b>1<sup>st</sup></b>	Working of simple frictional brakes.
	<b>2<sup>nd</sup></b>	Working of Absorption type of dynamometer
	<b>3<sup>rd</sup></b>	<b>Power Transmission :</b> Concept of power transmission
<b>5<sup>th</sup></b>	<b>1<sup>st</sup></b>	Type of drives, belt, gear and chain drive
	<b>2<sup>nd</sup></b>	Computation of velocity ratio, length of belts (open and cross)with and without slip
<b>6<sup>th</sup></b>	<b>1<sup>st</sup></b>	Ratio of belt tensions, centrifugal tension and initial tension.
	<b>2<sup>nd</sup></b>	Power transmitted by the belt.
<b>7<sup>th</sup></b>	<b>1<sup>st</sup></b>	Determine belt thickness and width for given permissible stress for open and crossed belt considering centrifugal tension.
	<b>2<sup>nd</sup></b>	V-belts and V-belts pulleys.
	<b>3<sup>rd</sup></b>	Concept of crowning of pulleys.
<b>8<sup>th</sup></b>	<b>1<sup>st</sup></b>	Gear drives and its terminology
	<b>2<sup>nd</sup></b>	Gear trains, working principle of simple, compound, reverted and epicyclic gear trains.
	<b>3<sup>rd</sup></b>	<b>Governors and Flywheel :</b> Function of governor
	<b>4<sup>th</sup></b>	Classification of governor
<b>9<sup>th</sup></b>		Working of Watt governer
	<b>1<sup>st</sup></b>	
	<b>2<sup>nd</sup></b>	Working of Porter, Proel governors
	<b>3<sup>rd</sup></b>	Working of Hartnell governors.

10 <sup>th</sup>	1 <sup>st</sup>	Conceptual explanation of sensitivity, stability and isochronisms.
	2 <sup>nd</sup>	Function of flywheel.
	3 <sup>rd</sup>	Comparison between flywheel & governor.
11 <sup>th</sup>	1 <sup>st</sup>	Fluctuation of energy and coefficient of fluctuation of speed.
	2 <sup>nd</sup>	Class test - 1
12 <sup>th</sup>	1 <sup>st</sup>	<b>Balancing of Machine :</b> Concept of static and dynamic balancing
	2 <sup>nd</sup>	Static balancing of rotating parts.
	3 <sup>rd</sup>	Principles of balancing of reciprocating parts.
13 <sup>th</sup>	1 <sup>st</sup>	Causes and effect of unbalance.
	2 <sup>nd</sup>	Difference between static and dynamic balancing
	3 <sup>rd</sup>	<b>Vibration of machine parts :</b> Introduction to Vibration and related terms (Amplitude, time period and frequency, cycle)
	4 <sup>th</sup>	Classification of vibration.
14 <sup>th</sup>	1 <sup>st</sup>	Basic concept of natural, forced & damped vibration
	2 <sup>nd</sup>	Basic concept of natural, forced & damped vibration
	3 <sup>rd</sup>	Torsional and Longitudinal vibration
15 <sup>th</sup>	1 <sup>st</sup>	Causes & remedies of vibration
	2 <sup>nd</sup>	Class test – 2 & Short questions discussion
	3 <sup>rd</sup>	Previous year Long questions discussion

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H.O.D. Mechanical