



National Institute of Technology Meghalaya
An Institute of National Importance

CURRICULUM

Programme	Bachelor of Technology in Mechanical Engineering	Year of Regulation	2018
Department	Mechanical Engineering	Semester	IV

Course Code	Course Name	Credit Structure				Marks Distribution	
		L	T	P	C	Continuous Evaluation	Total
ME 252	Theory of Machines Lab	0	1	2	2	100	100
Course Objectives	To understand the basics knowledge of steering mechanism, governor, gyroscope, moment balance, cams and whirling of shaft	Course Outcomes	CO1	To understand the static and dynamic balancing, moment balance, dynamic friction. (Understanding)			
			CO2	Understand the basic concepts of governor, gyroscope, and cams. (Understanding)			
	CO3		To verify Hooks law (applying)				
	CO4		To perform the whirling of shaft experiment and determining the critical speed in loaded condition (applying)				
	To perform the experiments using various setups to prove various principles of mechanics						

No.	COs	Mapping with Program Outcomes (POs)												Mapping with PSOs		
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	CO1	2	2	2	0	0	0	0	0	2	0	0	0	2	1	0
2	CO2	2	2	2	0	0	0	0	0	2	0	0	0	2	1	0
3	CO3	2	2	2	0	0	0	0	0	2	0	0	0	2	1	0
4	CO4	2	2	2	0	0	0	0	0	2	0	0	0	2	1	0
5	CO5	2	2	2	0	0	0	0	0	2	0	0	0	2	1	0
6	CO6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SYLLABUS

No.	Content	Hours	COs
1	To verify the laws of statics (Force and Torque Balance)	03	CO1
2	To determine mass moment of inertia of a flywheel.	03	CO1
3	Demonstration of fundamental principles of belt drives, wheel and disc drives and investigation of transmission ratios on spur gear.	03	CO1
4	To balance the masses statically and dynamically of a single reciprocating/rotating mass system.	03	CO1
5	To demonstrate and measure displacement curves for cam mechanisms.	03	CO2
6	To study the characteristic curves of different centrifugal force governors.	03	CO2
7	Experimental verification of the laws of gyroscopes – gyroscopic couple	03	CO2
8	To verify Hook’s law using parallel-coupled loaded/gimbal spring.	03	CO3
9	To study and conduct basic experiments on mechanical vibration, natural damped and forced vibrations (b) To understand the critical rotational speeds on simply loaded and continuous shafts – whirling of shaft	03	CO4
Total Hours		27	

Essential Readings

- 1 Joseph E. Shigley, “Theory of Machines and Mechanisms”, Oxford University Press.
- 2 Thomas Bevan, “Theory of Machines”, Pearson.

Supplementary Readings

1. Jagdish Lal, “Hydraulic Machines including Fluidics”, Metropolitan Book
2. Ghosh and Mallick, “Theory of Machines and Mechanisms”, Ease-West Press.