

Pimpri Chinchwad Education Trust's
Pimpri Chinchwad College of Engineering



Department: Mechanical Engg

Academic year -2023-24

Course Outline

Class: SY Mechanical

Name of the Course: Kinematics and Theory of Machines

Relevance of the course:

Kinematics and Theory of Machines is a fundamental course in Engineering Design Domain. It builds understanding of students in transforming and transmitting motion, and key elements of a machine. Curriculum indent to address and apply to a wide domain of engineering from Machineries in all fields, Agriculture, Bio-mechanics, Surgical tools, Automation Machinery and the builds base for Robotics.

Pre-requisites:

Engineering Mathematics, Fundamental of Mechanics, Power Transmission Elements, Type of Motion

Teaching Scheme				Evaluation Scheme			
Lecture	Tutorial	Credit	Hours	IE	MTE	ETE	Total
3	--	3	3	2	3	5	1

Points discussed and finalised:

1. Total 45 lectures are to be planned including assessment, conduct 3 lectures per week for Theory
2. CO-PO mapping in addressing of course contents and IE activities finalised.
3. Experiments: A1 to A4, B1, B2, and B5 (each be given 2 turns for conduct, C2 and C4 be conducted.
4. To prepare model Question paper with CO, BL and PI
5. To ensure and check understanding numerical to be discussed in the practical class.
6. Identification of Weak and Fast learners through – class discussions, MTE.
7. Questioner to be given to students for identified mechanism requirements, students will submit the same with Experiment A1
8. Paper Duration for MTE: 2 Hrs and ETE 3 Hrs due to graphical nature of paper.
9. Additional Numerial Assignments be given for Unit 2 and 4 (4 questions each)

Internal Assessment Tools and Activities:

1. **IE-1 Mode: consist of based on first two units –**
 - a. **Survey for Identification of Mechanism (PO7, PO12)**
 - b. **Velocity Analysis using Mech Analyser Open Source software PO5**

2. IE-2 assessment will be through based on unit 4 & 5 students will design and develop a Model/Toy with cams and Gears Mechanism.
(Group of TWO Students) (PO 7, 9,10,11,12)

Course Outcomes: * put no of lectures

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	CO2		*	*		*								*		
3	CO3	*	*											*		
4	CO4			*	*	*				*			*	*		
5	CO5	*	*											*		
6	CO6		*	*										*		

No.	COs	Teaching Plan for POs and PSO's						Classes
		PO1	PO2	PO3	PO4	PO5	PSO1	
1	CO1	2	3			1	1	8
2	CO2		2	5		1	1	9
3	CO3	2	5				1	8
4	CO4			2	2	1	1	6
5	CO5	2	6				1	9
6	CO6		2	2			1	5
Classes		6	18	9	2	3	6	48

CO	Statement	Theory Classes Number	Bloom's Level	Method of direct Assessment	
				Internal	External
CO1	Student will be able to Identify mechanisms in real life applications.	6+1+1	L2 BLM 0.6	IE 1 MTE	ETE
CO2	Analyse velocity & acceleration of mechanism by Graphical and analytical method	7+1+1	L3 BLM 0.7	IE 1 MTE	ETE
CO3	Compute Frictional torque and Power in Clutch and Brake for given application and gyroscopic couple for an application.	7+1	L3 BLM 0.7	MTE	ETE
CO4	Synthesize Cam for given application	5+1	L4 BLM 0.8	IE 2	ETE
CO5	Apply Fundamentals of Gear Theory for kinematic design of gears	8+1	L3 BLM 0.7	IE 2	ETE

CO6	Analyse Epicyclic Gear Train for speed and Torque.	5	L3 BLM 0.7	ETE
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Marks Distribution:

CO	IE1 (10)	MTE (50)			IE 2 (10)	ETE (80)							
		Q1/2 a,b,c	Q3/4 a,b	Q5/6 a,b,c		Q1/2 a	Q1/2 b	Q1/2 c	Q3/4 a,b	Q5/6 a,b,c,d	Q7/8 a,b		
CO1	5	16				3							24
CO2	5		16				3						24
CO3				18				8					26
CO4					5				20				25
CO5					5					24			29
CO6											22		22




Content Delivery Methods:

CDM1. Lecture with interaction

CDM4. Animations, Demonstration (through Models, chart, videos etc.)

CDM5. Case-study based, Survey

CDM7. Presentation

		
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