

Lesson Plan

Name of the Faculty : Mr. Pardeep
 Discipline : Mechanical Engineering
 Semester : 5th
 Subject : Kinematics of Machines (PCC-ME- 307G)
 Lesson Plan Duration : 15 Weeks (from Aug. 2020 to Nov. 2020)

** Work Load (Lecture) per week (in hours): Lectures-02, Practicals-01

Week	Theory		Practical	
	Lecture Day	Topic (including assignment/test)	Practical day	Topic
1 st	1 st	Introduction: mechanism and machines, kinematics links, kinematics pairs, kinematics chains.	1.	To study various types of Kinematic links, pairs, chains and Mechanisms.
	2 nd	Degree of freedom, Grubler’s rule.		
2 nd	3 rd	Kinematics inversion, equivalent linkages, four link planar mechanisms.	2.	To study inversions of 4 Bar Mechanisms, Single and double slider crank mechanisms.
	4 th	Straight line mechanisms, steering mechanisms, pantograph.		
3 rd	5 th	Kinematics Analysis of Plane Mechanisms: displacement analysis.	3.	To plot slider displacement, velocity and acceleration against

	6 th	Velocity diagram, velocity determination, relative velocity method.		crank rotation for single slider crank mechanism.
4 th	7 th	Instantaneous centre of velocity, Kennedy's theorem, graphical and analytical methods of velocity and acceleration analysis.	4.	To find coefficient of friction between belt and pulley.
	8 th	Cams: Classification of cams and followers, disc cam nomenclature.		
5 th	9 th	Construction of displacement, velocity and acceleration diagrams for different types of follower motions.	5.	To study various type of cam and follower arrangements.
	10 th	Analysis of follower motions, determination of basic dimension.		
6 th	11 th	Synthesis of cam profile by graphical methods, cams with specified contours.	6.	To plot follower displacement vs cam rotation for various Cam Follower systems.
	12 th	Gears: fundamental law of gearing, involute spur gears.		
7 th	13 th	Characteristics of involute and cycloidal action, Interference and undercutting, centre distance variation.	7.	To study various types of gears – Helical, cross helical worm, bevel gear.
	14 th	Path of contact, arc of contact, non standard gear teeth, helical, spiral bevel and worm gears.		
8 th	15 th	Gear Trains: synthesis of simple, compound and reverted gear trains.	8.	To study various types of gear trains – simple, compound, reverted,

	16 th	Analysis of epicyclic gear trains, problems.		epicyclic and differential.
9 th	17 th	Kinematics synthesis of Mechanisms: function generation, path generation.	9.	To find co-efficient of friction between belt and pulley
	18 th	Freudenstein's equation, two and three position synthesis of four bar and slider crank mechanisms by graphical and analytical methods.		
10 th	19 th	Precision positions, structural error; Chebychev spacing.	10.	To study the working of Screw Jack and determine its efficiency.
	20 th	Transmission angle, problems.		
11 th	21 th	Friction in journal bearing, friction circle and friction axis, pivots and collar friction		
	22 nd	Uniform pressure and uniform wear.		
12 th	23 nd	Belts and pulleys: Open and cross belt drive, velocity ratio, slip, material for belts.		
	24 nd	Crowning of pulleys, law of belting, types of pulleys.		
13 th	25 nd	Length of belts, ratio of tension, centrifugal tension, power transmitted by belts and ropes.		
	26 nd	Initial tension, creep, chain drives, chain length, classification of chains.		
14 th	27 nd	Revision		
	28 nd	Revision		
15 th	29 nd	Revision		
	30 nd	Revision		