LESSION PLAN

Name of Faculty :	VIKAS KUMAR
Discipline :	CIVIL ENGG.
Semester :	3rd
Subject :	Applied Mechanics
Lession Plan Duration:	15 Weeks(July 2018 to Nov 2018)

Week	Lecture Day	Theory — Topic (including assignments)	Practical Day	Practical — Topic
1st	1	Concept of engineering mechanics definition of mechanics, statics, dynamics	1	Overview of the subject, Importance in industry & Applications of the subject.
	2	Application of engineering mechanics in practical fields Different systems of units (FPS,CGS, MKS and SI)		
	3	Their conversion from one to another e.g. density, force, pressure, work, power, velocity,acceleration	2	Overview of the subject, Importance in industry & Applications of the subject
2nd	1	Simple Numerical Problems	1	Verification of the polygon law of forces using Gravesand's apparatus.
	2	Fundamental Units and Derived Units.		
	3	Concept of rigid body, scalar and vector quantities	2	Verification of the polygon law of forces using Gravesand's apparatus.
3rd	1	**Laws of forces** Definition of force, Bow's Notations, types of force	1	To verify the forces in different members of jib crane.
	2	Point force/concentrated force & Uniformly distributed force, effects of force, characteristics of a force.		
	3	Different force systems, principle of transmissibility of forces, law of super-position	2	To verify the forces in different members of jib crane.
4th	1	Composition and resolution of coplanar concurrent forces, resultant force, method of composition of forces. laws of forces, triangle law of forces.	1	To verify the reaction at the supports of a simply supported beam.
	2	Polygon law of forces -graphically, analytically, resolution of forces		
	3	Free body diagram Equilibrant force and its determination	2	To verify the reaction at the supports of a simply supported beam.
5th	1	Lami's theorem [Simple problems on above topics] Moment - Concept of moment Moment of a force and units of moment.	1	To find the mechanical advantage, velocity ratio and efficiency in case of an inclined plane.
	2	Varignon's theorem (definition only) Principle of moment and its applications		
	3	(Levers – simple and compound, steel yard, safety valve, reaction at support)	2	To find the mechanical advantage, velocity ratio and efficiency in case of an inclined plane.

		Theory		Practical
6th	1	Parallel forces (like and unlike parallel force), calculating their resultant	1	To find the mechanical advantage, velocity ratio and efficiency of a screw jack.
	2	Concept of couple, its properties and effects General conditions of equilibrium of bodies under coplanar forces		
	3	Position of resultant force by moment. [Simple problems on the above topics]	2	To find the mechanical advantage, velocity ratio and efficiency of a screw jack.
7th	1	Friction- Definition and concept of friction, types of friction, force of friction, Limiting Friction	1	Practice
	2	Laws of static friction, coefficient of friction, angle of friction, angle of repose.		
	3	Equilibrium of a body lying on a horizontal plane, equilibrium of a body lying on a rough inclined plane	2	Practice
8th	1	Calculation of least force required to maintain equilibrium of a body on a rough inclined plane subjected to a force: a) Acting along the inclinedplane	1	To find the mechanical advantage, velocity ratio and efficiency of worm and worm wheel.
	2	b) At some angle with the inclined plane. Ladder friction Advantages and Disadvantages of friction		
	3	Methods of increasing/decreasing the force of friction.(Simple problems)	2	To find the mechanical advantage, velocity ratio and efficiency of worm and worm wheel.
9th	1	Assignment	1	To find mechanical advantage, velocity ratio and efficiency of single purchase crab.
	2	Centre of Gravity - Concept, definition of centroid of plain figures.		
	3	Centre of gravity of symmetrical solid bodies, difference between centroid and C.G.	2	To find mechanical advantage, velocity ratio and efficiency of single purchase crab.
10th	1	Determination of centroid of plain and composite lamina using moment method only.	1	Practice
	2	centroid of bodies with removed portion. Determination of center of gravity of solid bodies - cylinder.		
	3	Determination of center of gravity of solid bodies - cube, cuboid.	2	Practice
11th	1	Determination of center of gravity of solid bodies- sphere	1	To find out center of gravity of regular lamina
	2	Determination of center of gravity of solid bodiescomposite bodies and bodies with portion removed		
	3	Simple problems on the above topics	2	To find out center of gravity of regular lamina

		Theory		Practical
12th	1	Assignment on Chapter Centre of Gravity	1	To find out center of gravity of irregular lamina
	2	Simple Machines- Definition of Simple and compound machine (Examples)		
	3	Definition of load, effort, velocity ratio, mechanical advantage and efficiency of a machine	2	To find out center of gravity of irregular lamina
13th	1	load, effort, velocity ratio, mechanical advantage their relationship, law of machines and efficiency of a machine	1	Practice
	2	Definition of ideal machine, reversible and self locking machine. Effort lost in friction, Load lost in friction.		
	3	Determination of maximum mechanical advantage and maximum efficiency.	2	Practice
14th	1	System of pulleys (first, second) Third system of pulleys.	1	To determine coefficient of friction between three pairs of given surface.
	2	Determination of velocity ratio, mechanical advantage and efficiency.		
	3	Working principle and application of wheel and axle, Weston's Differential Pulley Block.	2	To determine coefficient of friction between three pairs of given surface.
15th	1	Simple screw jack, worm and worm wheel.	1	Practice
	2	Single and double winch crab.		
	3	Expression for their velocity ratio and field of their application [Simple problems on the above topics].	2	Practice