



**GOVERNMENT POLYTECHNIC, KORAPUT**

**DEPARTMENT OF MECHANICAL ENGINEERING**

Discipline <b>MECHANICAL ENGG.</b>	Semester: <b>5<sup>TH</sup></b>	Name of the Teaching Faculty: Mr. N Bikash Rao
Subject: <b>DESIGN OF MACHINE ELEMENTS</b>	No. of days/ per week class allotted: 04	Semester From date: 01/08/23 To Date:30/11/23  No.of Weeks: 15
<b>COURSE OUTCOMES</b>	<b>CO1:</b> Understand the standard procedure for design of machine elements <b>CO2:</b> Understand the design of various fastening elements with their uses <b>CO3:</b> Understand the function of shaft and keys and their uses in engineering applications <b>CO4:</b> Design couplings used for power transmission <b>CO5:</b> Design closed coiled helical spring	
<b>Week</b>	<b>Class Day</b>	<b>Theory/Practical Topics</b>
1 <sup>ST</sup>	1 <sup>ST</sup>	Introduction toMachinedesign&itsclassification
	2 <sup>ND</sup>	Statethetypesofloads,definestressandstrain
	3 <sup>RD</sup>	Statemechanical&physicalpropertiesofthematierial
	4 <sup>TH</sup>	Define working stress, yield stress, ultimate stress andFactorof safety,stressstraincurve forM.S &C.I
2 <sup>ND</sup>	1 <sup>ST</sup>	Explainedifferentmodesoffailureofamaterial
	2 <sup>ND</sup>	Factorsgoverningthedesignofmachineelements
	3 <sup>RD</sup>	Describedesignprocedure
	4 <sup>TH</sup>	
3 <sup>RD</sup>	1 <sup>ST</sup>	Defineajoint andclassifythem
	2 <sup>ND</sup>	Types of welded joints, advantages of welded joints overotherjoints
	3 <sup>RD</sup>	Designofweldedjoints
	4 <sup>TH</sup>	Problemsolving
4 <sup>TH</sup>	1 <sup>ST</sup>	Problemsolving
	2 <sup>ND</sup>	Determinestrengthofweldedjointsforeccentricloads
	3 <sup>RD</sup>	Contd.
	4 <sup>TH</sup>	Problemsolving
5 <sup>TH</sup>	1 <sup>ST</sup>	Problemsolving
	2 <sup>ND</sup>	Explaintypesofrivetedjoints andtypesofrivets
	3 <sup>RD</sup>	Describefailureofrivetedjoints
	4 <sup>TH</sup>	Determinestrengthandefficiencyofrivetedjoints
6 <sup>TH</sup>	1 <sup>ST</sup>	Problemsolving
	2 <sup>ND</sup>	Designrivetedjointsforpressurevessel
	3 <sup>RD</sup>	Problemsolving
	4 <sup>TH</sup>	
7 <sup>TH</sup>	1 <sup>ST</sup>	Statefunction,sizeand materialsofshafts
	2 <sup>ND</sup>	Designsolid and hollowshafts based onstrengthand Rigidity
	3 <sup>RD</sup>	Contd.
	4 <sup>TH</sup>	Problemsolving
8 <sup>TH</sup>	1 <sup>ST</sup>	Problemsolving
	2 <sup>ND</sup>	Statefunctions,typesandmaterial ofkeys

	3 <sup>RD</sup>	Describe failure of key & effect of keyway
	4 <sup>TH</sup>	Design rectangular key against shear and crushing failure
9 <sup>TH</sup>	1 <sup>ST</sup>	Design rectangular key using empirical relation
	2 <sup>ND</sup>	State specification of different types of keys as per I.S
	3 <sup>RD</sup>	Problem solving
	4 <sup>TH</sup>	
10 <sup>TH</sup>	1 <sup>ST</sup>	Define coupling and state its types
	2 <sup>ND</sup>	State the requirements of a good shaft coupling
	3 <sup>RD</sup>	Design of sleeve or muff coupling
	4 <sup>TH</sup>	Problem solving
11 <sup>TH</sup>	1 <sup>ST</sup>	Design of clamp or compression coupling
	2 <sup>ND</sup>	Problem solving
	3 <sup>RD</sup>	
	4 <sup>TH</sup>	State the function and uses of springs
12 <sup>TH</sup>	1 <sup>ST</sup>	Materials used for helical springs, its types
	2 <sup>ND</sup>	Standard size spring wire, Terms used in compression springs Stress in helical spring of a circular wire End connection for helical tension spring
	3 <sup>RD</sup>	Deflection of helical spring of circular wire
	4 <sup>TH</sup>	Surge in spring
13 <sup>TH</sup>	1 <sup>ST</sup>	Problem solving
	2 <sup>ND</sup>	Problem solving
	3 <sup>RD</sup>	Problem solving
	4 <sup>TH</sup>	

#### LEARNING RESOURCES:

01. A textbook of Machine design by RS Khurmi and JK Gupta, S.Chand Publisher
02. Design of Machine elements by V.B. Bhandari, TMH
03. A textbook of Machine design by P.C. Sharma & D.K. Agarwal, S.K. Kataria & Sons
04. Design Data Handbook by S Md. Jalaludeen , Anuradha Publication

#### WEBSITE RESOURCES:

*N. Biswas Das*  
Sign. Of Faculty concerned 02/8/23

*N. Biswas Das*  
02/8/23  
Sign. Of HOD EC

Principal  
G.P KORAPUT