**USHA RAMA COLLEGE OF ENGINEERING AND TECHNOLOGY**

*Department of Mechanical Engineering*

**LESSON PLAN**

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| --- | --- |
| **Academic Year** : 2016-16 | **Sem**  : I |
| **Course**: **DESIGN OF MACHINE MEMBERS - I** |
| **Class** : III B.TECH  | **Section** : ME A&B |
| **Date of commencement of Class work** :13/06/2016 | **Date of end of Class work** : 08/10/2016 |
| **Prepared By**: K.shanthi, Assistant Professor | **Approved By**: HOD |

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| **Lecture****No** | **Date (As per Academic calendar)** | **Topics to be covered** | **Actual****Dateof completion** | **Remarks** |
| 1 | **13.6.16** | **INTRODUCTION:** General considerations design of Engineering Materialsdesign of Engineering Materialsdesign of Engineering Materials in the design of  |  |  |
| 2 | **14.6.16** | Engineering Materials and their properties – selection |  |  |
| 3 | **15.6.16** | Manufacturing consideration in design, tolerances and fits –BIS codes of steels. |  |  |
| 4 | **16.6.16** | **STRESSES IN MACHINE MEMBERS:** Simple stresses – combined stresses – torsional |  |  |
| 5 | **17.6.16** | bending stresses- impact stresses-Problems |  |  |
| 6 | **18.6.16** | stress strain relation – various theories of failure- |  |  |
| 7 | **20.6.16** | various theories of failure-prob- factor of safety |  |  |
| 8 | **21.6.16** | design for strength and rigidity – preferred numbers |  |  |
| 9 | **22.6.16** | the concept of stiffness in tension, bending, |  |  |
| 10 | **23.6.16** | torsion and combined situations –  |  |  |
| 11 | **24.6.16** | static strength design based on fracture toughness-prob |  |  |
| 12 | **25.6.16** | Problems on above topics |  |  |
| 13 | **27.6.16** | Problems on above topics |  |  |
| 14 | **28.6.16** | Problems on above topics |  |  |
| 15 | **29.6.16** | Problems on above topics |  |  |
| 16 | **30.6.16** | **STRENGTH OF MACHINE ELEMENTS:** Stress concentration – theoretical stress concentration factor . |  |  |
| 17 | **01.7.16** | fatigue stress concentration factor notch sensitivity |  |  |
| 18 | **02.7.16** | Prob on above topics |  |  |
| 19 | **04.07.16** | design for fluctuating stresses |  |  |
| 20 | **05.7.16** | endurance limit – estimationof endurance strength |  |  |
| 21 | **07.7.16** | Problems on above topics |  |  |
| 22 | **08.7.16** | Problems on above topics |  |  |
| 23 | **09.7.16** | goodman’s line – soderberg’s line |  |  |
| 24 | **11.7.16** | modified goodman’s line. |  |  |
| 25 | **12.7.16** | Problems on above topics |  |  |
| 26 | **13.7.16** | Problems on above topics |  |  |
| 27 | **14.7.16** | Problems on above topics |  |  |
| 28 | **15.7.16** | **Riveted and welded joints:** design of joints with initial stresses |  |  |
| 29 | **16.7.16** | design of joints -eccentric loading |  |  |
| 30 | **18.7.16** | Problems on above topics |  |  |
| 31 | **19.7.16** | Problems on above topics |  |  |
| 32 | **20.7.16** | design of joints -eccentric loading |  |  |
| 33 | **21.7.16** | Problems on above topics |  |  |
| 34 | **22.7.16** | Problems on above topics |  |  |
| 35 | **23.7.16** | **Bolted joints-** design of bolts with pre-stresses |  |  |
| 36 | **25.7.16** | Problems on above topics |  |  |
| 37 | **26.7.16** | design of joints under eccentric loading |  |  |
| 38 | **27.7.16** | Problems on above topics |  |  |
| 39 | **28.7.16** | Problems on above topics |  |  |
| 40 | **29.7.16** | locking devices – both of uniform strength, different seals. |  |  |
| 41 | **30.7.16** | Problems on above topics |  |  |
| 42 | **01.8.16** | Problems on above topics |  |  |
| 43 | **02.8.16** | Problems on above topics |  |  |
| 44 | **03.8.16** | Problems on above topics |  |  |
| 45 | **04.08.16** | Problems on above topics |  |  |
| 46 | **05.08.16** | Problems on above topics |  |  |
| 47 | **06.8.16** | Problems on above topics |  |  |
|  | **08.8.16 To13.8.16** | MID EXAMINATIONS-I |  |  |
| 48 | **16.8.16** | **KEYS, COTTERS AND KNUCKLE JOINTS:** Design of keys-stresses in keys |  |  |
| 49 | **17.8.16** | Problems on above topics |  |  |
| 50 | **18.8.16** | cotter joints-spigot and socket |  |  |
| 51 | **19.8.16** | Problems on above topics |  |  |
| 52 | **20.8.16** | Problems on above topics |  |  |
| 53 | **22.8.16** | sleeve and cotter, jib and cotter joints- knuckle joints. |  |  |
| 54 | **23.08.16** | Problems on above topics |  |  |
| 55 | **24.08.16** | Problems on above topics |  |  |
| 57 | **26.8.16** | Problems on above topics |  |  |
| 58 | **27.8.16** | **SHAFTS:**Design of solid and hollow shafts for strength and rigidity |  |  |
| 59 | **29.8.16** | Problems on above topics |  |  |
| 60 | **30.08.16** | Problems on above topics |  |  |
| 61 | **31.08.16** | design of shafts for combined bending and axial loads |  |  |
| 62 | **1.9.16** | Problems on above topics |  |  |
| 63 | **2.9.16** | Problems on above topics |  |  |
| 64 | **3.9.16** | shaft sizes – BIS code. Use of internal and external circlips, gaskets and seals (stationary & rotary). |  |  |
| 65 | **06.09.16** | Problems on above topics |  |  |
| 66 | **07.9.16** | Problems on above topics |  |  |
| 67 | **8.9.16** | Problems on above topics |  |  |
| 68 | **09.9.16** | **SHAFT COUPLING:** Rigid couplings – muff, split muff |  |  |
| 69 | **10.9.16** | Problems on above topics |  |  |
| 70 | **13.9.16** | Problems on above topics |  |  |
| 71 | **14.9.16** | Problems on above topics |  |  |
| 72 | **15.9.16** | flange couplings, flexible couplings |  |  |
| 73 | **16.9.16** | Problems on above topics |  |  |
| 74 | **17.9.16** | Problems on above topics |  |  |
| 75 | **19.9.16** | flange coupling (modified). |  |  |
| 76 | **20.9.16** | Problems on above topics |  |  |
| 77 | **21.9.16** | Problems on above topics |  |  |
| 78 | **22.9.16** | **MECHANICAL SPRINGS:** Stresses and deflections of helical springs |  |  |
| 79 | **23.9.16** | Problems on above topics |  |  |
| 80 | **24.9.16** | Problems on above topics |  |  |
| 81 | **26.9.16** | Problems on above topics |  |  |
| 82 | **27.9.16** | extension -compression springs – springs for fatigue loading |  |  |
| 83 | **28.9.16** | Problems on above topics |  |  |
| 84 | **01.10.16** | Problems on above topics |  |  |
| 85 | **03.10.16** | energy storage capacity – helical torsion springs |  |  |
| 86 | **04.10.16** | Problems on above topics |  |  |
| 87 | **05.10.16** | Problems on above topics |  |  |
| 88 | **06.10.16** | co-axial springs, leaf springs. |  |  |
| 89 | **07.10.16** | Problems on above topics |  |  |
| 90 | **08.10.16** | Problems on above topics |  |  |
|  | **10.10.16 To 15.10.16** |  Mid Exams-II |  |  |

**TEXT BOOKS:**

1. Machine Design, V.Bandari, TMH Publishers
2. Machine design – Pandya & Shah
3. Machine Design PSG Data hand book

**REFERENCES:**

1. Design of Machine Elements / V.M. Faires
2. Machine design / Schaum Series.

**List the Course Outcomes (Cos):**

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| Sub code | Sub Name | COs | Expected level of attainmentOn 5 scale |
|  | **DESIGN OF MACHINE MEMBERS - I** | 1. . Apply the design procedure to engineering problems, including the consideration of technical and manufacturing constraints2. Select suitable materials and significance of tolerances and fits in critical design applications.3 Utilize design data hand book and design the elements for strength, stiffness and fatigue. 4. . Identify the loads, the machine members subjected and calculate static and dynamic stresses to ensure safe design. | 3.53.53.53.5 |

**Signature of faculty Head of the Department**