GANDHI ACADEMY OF TECHNOLOGY AND ENGINEERING

Department of Mechanical Engineering

**LESSON PLAN**

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| Subject | Design of Machine Elements | | |
| Branch | Mechanical Engineering | Name of the Faculty | Mr. Aswin Pradhan |
| Course Code | Th 2 | Semester | 5Th Semester |
| Total Periods | 60 | Examination | 2023-24 |
| Theory Period | 4P/ W | Class Test | 20 Marks |
| Maximum Marks | 100 Marks | End Semester Examination | 80 Marks |

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| **Week** | **Class Day** | **Theory Topics** |
| **1st** | **1st** | Introduction about Machine Design and classification, types of load |
| **2nd** | Factors governing the design of machine elements. Design procedure |
| **3rd** | Mechanical properties of the material of the product. |
| **4th** | Types of loads. Working stress, Yield stress, Ultimate Stress& Factor of safety. Fatigue & Creep. |
| **2nd** | **1st** | ReviewClass |
| **2nd** | AssignmentEvaluation&ClassTest |
| **3rd** | Methodofriveting,Typesofrivetedjoints |
| **4th** | Failures ofrivetedjoints,Strength&efficiencyofriveted joints. |
| **3rd** | **1st** | ClassroomProblem |
| **2nd** | ClassroomProblem |
| **3rd** | ClassroomProblem |
| **4th** | ReviewClass |
| **4th** | **1st** | Typesofweldedjoints.Advantagesofweldedjointsover other joints. |
| **2nd** | Strengthofweldedjointsforeccentric loads. |
| **3rd** | ClassroomProblem |
| **4th** | ClassroomProblem |

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| **5th** | **1st** | ClassroomProblem |
| **2nd** | ReviewClass |
| **3rd** | Nomenclatures,formofthreads&specifications. |
| **4th** | Designofscrewthread(nutand bolt). |
| **6th** | **1st** | ClassroomProblem |
| **2nd** | ClassroomProblem |
| **3rd** | ReviewClass |
| **4th** | AssignmentEvaluation&ClassTest |
| **7th** | **1st** | Functionofshafts.Materialsforshafts.Standardsize of shaft as per I.S. |
| **2nd** | Designsolid&hollowshaftstotransmitagivenpoweratgivenrpm based on (a) Strength (Shear stress, Combined bending &tension) |
| **3rd** | ClassroomProblem |
| **4th** | ClassroomProblem |
| **8th** | **1st** | Designsolid&hollowshaftstotransmitagivenpoweratgivenrpm based on (b) Rigidity (Angle of twist,  Deflection,modulusofrigidity) |
| **2nd** | ClassroomProblem |
| **3rd** | ClassroomProblem |
| **4th** | ReviewClass |
| **9th** | **1st** | AssignmentEvaluation&ClassTest |
| **2nd** | Functionofkeys,typesofkeys&materialofkeys.Failureof key, effect of key way. |
| **3rd** | Designrectangularsunkkeyconsideringitsfailureagainstshear & crushing. Design rectangular sunk key byusing empirical relation for given diameter of shaft. |
| **4th** | Specificationofparallelkey,Gib-headkey,taperkeyasperI.S. |
| **10th** | **1st** | ClassroomProblem |
| **2nd** | ClassroomProblem |
| **3rd** | ClassroomProblem |
| **4th** | ReviewClass |
| **11th** | **1st** | QuizTest |
| **2nd** | DesignofShaftCoupling |
| **3rd** | Requirementsofagoodshaftcoupling,Typesof Coupling |
| **4th** | DesignofSleeveorMuff-Coupling. |
| **12th** | **1st** | ClassroomProblem |
| **2nd** | ClassroomProblem |
| **3rd** | DesignofClamporCompressionCoupling. |
| **4th** | ClassroomProblem |
| **13th** | **1st** | ClassroomProblem |
| **2nd** | Reviewclass |

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|  | **3rd** | AssignmentEvaluation&ClassTest |
| **4th** | Materialsusedforhelicalspring.Standardsizespringwire.(SWG), Terms used in compression spring. |
| **14th** | **1st** | Stressinhelicalspringofacircularwire.Endconnectionforhelical tensionspring. |
| **2nd** | Endconnectionforhelicaltensionspring.Deflectionofhelical spring of circular wire. Surge in spring |
| **3rd** | ClassroomProblem |
| **4th** | ClassroomProblem |
| **15th** | **1st** | Reviewclass |
| **2nd** | AssignmentEvaluation&ClassTest |
| **3rd** | DiscussionofpreviousyearQuestions |
| **4th** | DiscussionofpreviousyearQuestions |