GUJARAT TECHNOLOGICAL UNIVERSITY
B.E. SEMESTER : VIII
MECHANICAL ENGINEERING

Subject Name: **INDUSTRIAL SAFETY & MAINTENANCE ENGINEERING**

Sr. No.	Course Contents	Total Hrs
1.	**Introduction to the development of industrial safety and management:** History and development of Industrial safety: Implementation of factories act, Formation of various councils, Safety and productivity, Safety organizations. Safety committees, safety committee structure, Roll of management and roll of Govt. in industrial safety, Safety analysis.	08
2.	**Accident preventions, protective equipments and the Acts:** Personal protective equipment, Survey the plant for locations and hazards, Part of body to be protected, Education and training in safety, Prevention causes and cost of accident, Housekeeping, First aid, Fire fighting equipment, Accident reporting, Investigations, Industrial psychology in accident prevention, Safety trials.	07
3.	**Safety Acts:** Features of Factory Act, Introduction of Explosive Act, Boiler Act, ESI Act, Workman's compensation Act, Industrial hygiene, Occupational safety, Diseases prevention, Ergonomics, Occupational diseases, stress, fatigue, health, safety and the physical environment, Engineering methods of controlling chemical hazards, safety and the physical environment, Control of industrial noise and protection against it, Code and regulations for worker safety and health.	06
4.	**Principles and practices of Maintenance planning:** Basic Principles of maintenance planning – Objectives and principles of planned maintenance activity – Importance and benefits of sound Maintenance systems – Reliability and machine availability, Equipment Life cycle, Measures for Maintenance Performance: Equipments breakdowns, Mean Time Between Failures, Mean Time To Repair, Factors of availability, Maintenance organization, Maintenance economics.	08
5.	**Maintenance policies and preventive maintenance:** Maintenance categories – Comparative merits of each category – Preventive maintenance, Maintenance schedules: Repair cycle, Principles and methods of lubrication, Fault Tree Analysis, Total Productive Maintenance: Methodology and Implementation,	08
6.	**Condition Monitoring:** Condition Monitoring: Cost comparison with and without Condition Monitoring, On-load testing and off load. Methods and instruments for Condition Monitoring, Temperature sensitive tapes, Pistol thermometers, wear-debris analysis, noise vibration and harshness analysis of machines	08

Term Work: The term work shall be based on the topics mentioned above.
Practical / Oral: The candidate shall be examined on the basis of term-work.

Text Books:
1. Srivastava, S.K., "Industrial Maintenance Management", S. Chand and Co.
2. Bhattacharya, S.N., "Installation, Servicing and Maintenance", S. Chand and Co.
3. Willie Hammer, "Occupational Safety Management and Engineering", Prentice Hall

Reference Books:
1. White, E.N., "Maintenance Planning", Documentation, Gower Press
2. Garg, M.R., "Industrial Maintenance", S. Chand and Co.
3. Higgins, L.R., "Maintenance Engineering Hand book", 5th Edition, McGraw Hill
4. Armstrong, "Condition Monitoring", BSIRSA
5. Davies, "Handbook of Condition Monitoring", Chapman and Hall
6. Ray Asfahl, C., "Industrial Safety and Health Management", 5th Edition, Prentice Hall
7. S.C.Mishra, "Reliability and Maintenance Engineering", New Age Publishing house