



GUJARAT TECHNOLOGICAL UNIVERSITY

Master of Engineering
Semester – III
Subject Code: 3730006
Subject Name: Industrial Safety

Type of course: Open Elective

Prerequisite: Nil

Rationale:

Safety is major issue in any industry; awareness about safety helps students from any major accidents, Different rules regulation of safety helps students apply it in industry for performance and productivity improvements. Knowledge of Maintenance, its type and application gives better work environments and helps industry from major shutdown. Different maintenance tools and techniques for different situation and industry equipment's helps students to apply it in real life industry problems.

Course Scheme:

Teaching Scheme			Total Credits	Assessment Pattern and Marks				Total Marks
L	T	PR		C	Theory		Practical	
			ESE (E)		PA(M)	ESE (V)	PA (I)	
03	00	00	03	70	30	00	00	100

Course Content:

Sr. No	Course Content	No of Hours	% Weightage
1.	Unit-I: Industrial Safety: Accident, causes, types, results and control, mechanical and electrical hazards, types, causes and preventive steps/procedure, describe salient points of factories act 1948 for health and safety, wash rooms, drinking water layouts, light, cleanliness, fire, guarding, pressure vessels, etc., Safety color codes. Fire prevention and firefighting, equipment and methods	10	20
2.	Unit-II: Fundamentals of Maintenance Engineering: Definition and aim of maintenance engineering, Primary and secondary functions and responsibility of maintenance department, Types of maintenance, Types and applications of tools used for maintenance, Maintenance cost & its relation with replacement economy, Service life of equipment.	6	15
3.	Unit-III: Wear and Corrosion and their Prevention: Wear- types, causes, effects, wear reduction methods, lubricants-types and	10	20



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	applications, Lubrication methods, general sketch, working and applications, i. Screw down grease cup, ii. Pressure grease gun, iii. Splash lubrication, iv. Gravity lubrication, v. Wick feed lubrication vi. Side feed lubrication, vii. Ring lubrication, Definition, principle and factors affecting the corrosion. Types of corrosion, corrosion prevention methods.		
4.	Unit-IV: Fault Tracing: Fault tracing-concept and importance, decision tree concept, need and applications, sequence of fault finding activities, show as decision tree, draw decision tree for problems in machine tools, hydraulic, pneumatic, automotive, thermal and electrical equipment's like, i. Any one machine tool, ii. Pump iii. Air compressor, iv. Internal combustion engine, v. Boiler, vi. Electrical motors, Types of faults in machine tools and their general causes.	12	30
5.	Unit-V: Periodic and Preventive Maintenance: Periodic inspection-concept and need, degreasing, cleaning and repairing schemes, overhauling of mechanical components, overhauling of electrical motor, common troubles and remedies of electric motor, repair complexities and its use, definition, need, steps and advantages of preventive maintenance. Steps/procedure for periodic and preventive maintenance of: i. tools, ii. Pumps, iii. Air compressors, iv. Diesel generating (DG) sets, Program and schedule of preventive maintenance of mechanical and electrical equipment, advantages of preventive maintenance. Repair cycle concept and importance	6	15

Reference Books:

1. Maintenance Engineering Handbook, Higgins & Morrow, Da Information Services.
2. Maintenance Engineering, H. P. Garg, S. Chand and Company.
3. Pump-Hydraulic Compressors, Audels, McGraw Hill Publication
4. Foundation Engineering Handbook, Winterkorn, Hans, Chapman & Hall London

Course Outcome:

After Completion of the Course, Student will able to:

No	Course Outcomes	RBT Level*
01	Understand the concepts of Industrial safety and Engineering maintenance	UN
02	Apply different tools and techniques for engineering maintenance.	AP
03	Implement fault tracing concepts and decision trees for different equipment.	AP



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04	Analyse periodic and preventive maintenance.	AN
05	Evaluate different maintenance and industrial safety techniques.	EL

*RM: Remember, UN: Understand, AP: Apply, AN: Analyze, EL: Evaluate, CR: Create