



# GUJARAT TECHNOLOGICAL UNIVERSITY

Master of Engineering (Electric Vehicle Technology)

Subject Code : 3726411

Subject Name : Industrial Safety

WEF Academic Year:	2023-24
Semester:	2
Category of the 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.

**Teaching and Examination Scheme:**

Teaching Scheme			Credits C	Examination Marks				Total Marks
L	T	P		Theory Marks		Practical Marks		
				ESE (E)	PA (M)	ESE (V)	PA (I)	
3	0	0	3	70	30	0	0	100

Sr. No.	Content	Total Hrs.	% Weigh tage
1	<b>Unit-I: Industrial Safety:</b> 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	<b>Unit-II: Fundamentals of Maintenance Engineering:</b> 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	<b>Unit-III: Wear and Corrosion and their Prevention:</b> Wear- types, causes, effects, wear reduction methods, lubricants-types and 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.	10	20



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4	<b>Unit-IV: Fault Tracing:</b> 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	<b>Unit-V: Periodic and Preventive Maintenance:</b> 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 Outcomes:

Sr. No	CO STATEMENT	Marks % weightage
CO1	Understand the concepts of Industrial safety and Engineering maintenance	UN
CO2	Apply different tools and techniques for engineering maintenance.	AP
CO3	Implement fault tracing concepts and decision trees for different equipment.	AP
CO4	Analyze periodic and preventive maintenance.	AN
CO5	Evaluate different maintenance and industrial safety techniques.	EL

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