GANPAT UNIVERSITY

FACULTY OF ENGINEERING & TECHNOLOGY

Programme	Master of Technology			Branch/Spec.	Electrical (Electrical Power System)/ (Renewable Energy)
Semester	II			Version	1.0.0.0
Effective from Academic Year	2025-2026			Effective for the batch Admitted in	July 2025
Course Code	3EE21OE1	Course Name		Industrial Safety	

Teaching scheme						Examination scheme (Marks)			
(Per week)	Lecture(DT)		Practical(Lab)		Total		CE	SEE	Total
	L	TU	P	TW					
Credit	3	0	0	0	3	Theory	40	60	100
Hours	3	0	0	0	3	Practical	00	00	00

Pre-requisites:

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Course Outcomes

On successful completion of the subject, students should be able to:

CO1	Understand the principles of industrial safety, accident prevention, and relevant legal provisions to ensure a safe working environment.
CO2	Apply maintenance engineering concepts and techniques to manage equipment maintenance, fault tracing, and cost-effective replacement.
CO3	Analyze causes and effects of wear and corrosion in mechanical systems and select appropriate prevention and lubrication methods.
CO4	Evaluate and implement periodic and preventive maintenance strategies to enhance equipment reliability and operational efficiency.

Theory syllabus

Unit	Content	Hrs
1	**Industrial Safety:** 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, washrooms, drinking water layouts, light, cleanliness, fire, guarding, pressure vessels, etc., Safety colour codes, Fire prevention, Firefighting equipment and methods.	**08**
2	**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 the equipment.	**08**
3	**Wear and Corrosion:** Wear and corrosion and their prevention: Wear- types, causes, effects, wear reduction methods, lubricants-types, applications, Lubrication methods, general sketch, working and applications, Screw down grease cup, Pressure grease gun, Splash lubrication, Gravity lubrication, Wick feed lubrication Side feed lubrication, Ring lubrication, Definition, principle and factors affecting the corrosion, Types of corrosion, Corrosion prevention methods.	**09**
4	**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 like Anyone machine tool, Pumps, Air compressor, Internal combustion engine, Boiler, Electrical motors, Types of faults in machine tools and their general causes.	**10**

5	**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 preventative maintenance of Machine tools, Pumps, Air compressors, Diesel generating (DG) sets, Program and schedule of preventive care of mechanical and electrical equipment, Advantages of preventive maintenance, Repair cycle concept and importance.	**10**

Practical content	
Assignments and tutorials are based on the above syllabus.	
Text 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.
Reference Books	
1.	Foundation Engineering Handbook, Winterkorn, Hans, Chapman & Hall London.
ICT/MOOCs	
1.	https://nptel.ac.in/courses/110/105/110105094/

Mapping of CO with PO and PSO:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	0	2	0	2	2	2	0	2	2	2	1	1	2
CO2	2	2	2	2	2	0	0	0	2	2	3	2	2	2	0
CO3	2	3	2	1	2	0	0	0	0	0	2	2	2	1	0
CO4	3	2	2	3	3	2	2	0	2	1	3	1	2	3	1