INDUSTRIAL SAFETY

Course Code	Category	Hours / Week			Credits	Maximum Marks		
		L	T	P	C	CIA	SEE	Total
BCSB26	Open Elective	3	-	-	3	30	70	100
Contact Classes: 45	Tutorial Classes: Nil	Practical Classes: Nil				Total Classes: 45		

I. COURSE OVERVIEW:

In this course, students develop a comprehensive understanding of industrial safety principles and practices. They are equipped with the skills to identify, assess, and manage workplace hazards, promoting a culture of safety in their future engineering careers.

II. COURSE OBJECTIVES:

The students will try to learn:

I. Ensuring duty holders apply inherent safety principles in managing risks.
II. Prioritizing interventions based on the inherent hazards of the site and/or pipeline, performance of duty holders in controlling risks and other defined operational intelligence.
III. Identifying the underlying, as well as the immediate, causes of any deficiencies in duty holders arrangements for managing risks.
IV. Taking action to ensure immediate and underlying causes of failures of risk management are addressed.

III. COURSE OUTCOMES:

After successful completion of the course, students should be able to:

CO 1	Describe the theories of accident causation and preventive measures of industrial accidents.	Understand
CO 2	Summarize the functions of maintenance department and application tools used for maintenance	Understand
CO 3	Recall the corrosion and its prevention methods	Remember
CO 4	Outline the fault tracing methods of various types of equipment	Understand
CO 5	Explain the Periodic and preventive maintenance of mechanical and electrical equipment	Understand

IV. SYLLABUS

UNIT-I	INDUSTRIAL SAFTEY	Classes: 09

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.

UNIT-II	MAINTENANCE ENGINEERING	Classes: 09

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.

UNIT-III	CORROSION AND PREVENTION TECHNIQUES	Classes: 09

Wear and Corrosion and their prevention: Wear- types, causes, effects, wear reduction methods, lubricants-types and applications, Lubrication methods, general sketch, working and applications, i.e. 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.		
UNIT-IV	**FAULT TRACING**	**Classes: 09**
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.		
UNIT-V	**PERODIC AND PREVENTIVE MAINTENANCE**	**Classes: 09**
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. Machine 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.		
Text Books		
1. Higgins & Morrow, "Maintenance Engineering Handbook", Da Information Services. H. P. Garg, "Maintenance Engineering", S. Chand and Company.		
Reference Books		
1. Audels, "Pump-hydraulic Compressors", Mcgraw Hill Publication. Winterkorn, Hans, "Foundation Engineering Handbook", Chapman & Hall London.		
Web References		
1. https://onlinecourses.nptel.ac.in/noc18_mg42/preview		
E-Text Books		
1. http://portal.unimap.edu.my/portal/page/portal30/Lecturer%20Notes/KEJURUTERAAN_KOMPUTER/Semester%201%20Sidang%20Akademik%2020142015/DPT333%20Industrial%20safety%20and%20health/Chapter%201%20-%20Introduction%20-Zaizu_0.pdf		