SARVAJANIK UNIVERSITY

Sarvajanik College of Engineering and Technology

Bachelor of Technology

Mechanical engineering Department

Semester VII

Course Name : Industrial Safety **Course Code: BTME15706**

Type of course : Open Elective Course

Prerequisite : Nil

Rationale of course : 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 help students to apply it in real life industry problems.

Teaching and Examination Scheme:

TEACHING SCHEME				Theory Marks			Practical Marks		Total
L	T	P	C	TEE	CA1	CA2	TEP	CA3	100
3	0	0	3	60	25	15	00	00	

CA1: Continuous Assessment (assignments/projects/open book tests/closed book tests **CA2:** Sincerity in attending classes/class tests/ timely submissions of assignments/self-learning attitude/solving advanced problems **TEE:** Term End Examination **TEP:** Term End Practical Exam (Performance and viva on practical skills learned in course) **CA3:** Regular submission of Lab work/Quality of work submitted/Active participation in lab sessions/viva on practical skills learned in course

Content:

Sr. No.	Content	Total Hrs	Module Weightage
1	**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.	07	15%
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 equipment.	07	15%

3	**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. 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. Measurement, Roundness measurement and their applications.	**11**	**25%**
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'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.	**11**	**25%**
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 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.	**09**	**20%**

Percentage Distribution of Marks as per Revised Bloom's Taxonomy (Theory/Practical):

Percentage Distribution of Marks					
R Level	U Level	A Level	N Level	E Level	C Level
20	**25**	**20**	**15**	**15**	**5**

Legends: R: Remembrance, **U:** Understanding; **A:** Application, **N:** Analyse, **E:** Evaluate **C:** Create

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Reference/Text Books:

Sr. No.	Title of book /article	Author(s)	Publisher	Year of publication	Publication Edition
1.	Maintenance Engineering Handbook	Higgins & Morrow	Da Information Services	2014	8th
2.	Maintenance Engineering	H. P. Garg	S. Chand and Company		
3.	Pump-hydraulic Compressors	Audels	Mcgrew Hill Publication	2008	8th
4.	Foundation Engineering Handbook	Winterkorn, Hans	Chapman & Hall London	2016	

Course Outcomes (CO's):

Sr. No.	CO Statement After learning this subject, students will be able to	Marks % weightage
CO-1	Discover Importance of Safety and identify Important related Acts.	10
CO-2	Apply Maintenance techniques as per requirements and able to compare for with different technique for better performance.	10
CO-3	Observe wear and corrosion, its causes and remedial actions for preventions.	30
CO-4	Demonstrate fault tracing, its methods and application.	20
CO-5	Generalize Importance of Safety and give examples for illustrating Important related Acts.	30

Mapping of CO's with Program Outcomes (PO's) and Program Specific Outcomes (PSO's):

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO-1	3	2	2	1	1	1	1	1	2	2	1	2
CO-2	3	3	2	2	2	2	1	1	1	2	1	1
CO-3	3	3	2	1	1	1	1	1	2	3	1	2
CO-4	2	3	2	3	2	1	2	1	1	3	1	1
CO-5	2	2	1	2	2	1	1	1	2	1	1	2
Rationale	13	13	9	9	8	7	6	5	8	11	5	8

Rationale of Mapping - CO's with PO's and CO's with PSO's:
It will develop basic engineering knowledge related to measurement, modern tool uses, problem analysis as well the skill of team work.

This course highly maps with Program outcomes 1, 2, 3, 4 and 10. It states that the course will develop Engineering knowledge, Problem analysis, Design / development of solutions, Conduct investigations of complex problems, Communication, Finally it will lead to, convert conceptual knowledge of mechanical engineering to real life application and with the use of modern computing tools and apply their technical, managerial and other soft skills in their professional life.

Assignments to be given as per the requirement of the course.

List of Open learning website: https://nptel.ac.in.

List of Open Source Software: Nil