Gyanmanjari Innovative University

Course Syllabus
Gyanmanjari Science College
Semester-1(M. Sc.)

Subject: Industrial Safety-I MSCIN11504

Type of course: Major

Prerequisite: Students should have a basic knowledge regarding safety measurements in industries

Rationale: The Prerequisite provides the foundation for understanding the concepts of safety measurements and management in industries

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks					Total Marks
				Theory Marks		Practical Marks		CA	
CI	T	P	C	ESE	MSE	V	P	ALA	
4	0	0	4	60	30	10	00	50	150

Legends: CI-Class Room Instructions; T – Tutorial; P - Practical; C – Credit; ESE - End Semester Examination; MSE- Mid Semester Examination; V – Viva; CA - Continuous Assessment; ALA- Active Learning Activities.

Course Content:

Unit No.	Course content	Hrs	% Weigh tage
1	**Introduction of safety**: - Introduction, concept of safety: definition of safety, need for safety, nature of safety, importance of safety, focus on human resources, concept of development, modern concept of SHE or HSE. **Problems of industrial safety**:- Classification, problems of industrial accidents, occupational health and environmental pollution, nature and size of safety problems, factors impending safety, reasons for accident prevention, place of industry and safety are inevitable, importance of safety technology and engineering for minimizing accident.	15	25
2	**Philosophy of safety**: - Meaning of philosophy, difference between science and philosophy, Philosophy of safety: need of safety philosophy, nature and subject of safety philosophy **Safety related definitions and terminology**: - Accident, incident, near miss, error, mistake, oversight, hazard, risk, danger, injury, major accident, major accident hazard installation, major emergency, unsafe act, unsafe conditions **Principle of accident prevention**:- Types of accidents, fundamental of accident prevention, unsafe act and unsafe conditions, selection of remedy, application of remedy, five 'E's accident prevention.	15	25
3	**Safety psychology**: - Introduction of psychology, Factors affecting accidents: attitude, aptitude, frustration, conflict, morale, fatigue, Boredom monotony, Behavior based safety (B.B.S) **Motivation**:- Maslow's hierarchy of needs theory Implications for management, limitation of Maslow's hierarchy.	15	25
4.	**General management**:- Definition, objectives, general principles of management by Henryfayol, element principles of management, quality role of functions of a manager, 10 types of power theory, difference between authority and power.	15	25

Continuous Assessment:

Sr. No	Active Learning Activities	Marks
1.	**Accident Investigation:** To understand the classification of industrial accidents, the factors that cause them, and the reasons for accident preventions and prepare a report for the same and upload it on the GMIU Web portal.	10

2.	**Mind Map of Hazards and Risks:** Students should prepare a report on distinguishing between hazard, risk, and danger and see how they are related and upload it on the GMIU portal.	10
3.	**Maslow's Hierarchy Poster Creation:** Students need to analyze Maslow's Hierarchy of Needs to the workplace and identify how different levels of needs are met or unmet in a safety context. Prepare a report for the same and upload it on the GMIU Web portal	10
4.	**Debate on Safety vs Production:** To explore the "factors impeding safety" and the concept that "place of industry and safety are inevitable.	10
5.	**Power Play Case Study Analysis:** Student should write a note on ten types of power theory and the difference between authority and power. Upload complete report on GMIU Web Portal	10
Total		**50**

Suggested Specification table with Marks (Theory):60

Distribution of Theory Marks (Revised Bloom's Taxonomy)						
Level	Remembrance (R)	Understanding (U)	Application (A)	Analyze (N)	Evaluate (E)	Create (C)
Weightage	25%	25%	30%	20%	00	00

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.

Course Outcome:

After learning the course the students should be able to:	
CO1	Classify and analyze the problems of industrial safety, including the causes of accidents, occupational health issues, and environmental pollution.
CO2	Evaluate the role of motivation in safety by applying Maslow's hierarchy of needs and its implications for management in creating a safe work environment
CO3	Describe the core functions of a manager and their specific roles in fostering a culture of

	quality and safety within an organization.
CO4	Differentiate between authority and power, and analyze the various types of power to understand how they can be used to influence safety-related decisions and behaviors in the workplace.

Instructional Method:

The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by black board, may also use any of tools such as demonstration, role play, Quiz, brainstorming, MOOCs etc.

From the content 10% topics are suggested for flipped mode instruction.

Students will use supplementary resources such as online videos, NPTEL/SWAYAM videos, e-courses, Virtual Laboratory.

The internal evaluation will be done on the basis of Active Learning Assignment

Practical/Viva examination will be conducted at the end of semester for evaluation of performance of students in laboratory.

Reference Books:

1. Safety management by R. C. Shah.
2. Environmental pollution analysis by S. M. Khopkar.
3. Industrial analysis by B.K.Sharma, Gael publication.
4. Safety in engineering – I by S. Damodaran and J. P.
5. Safety in chemical industry By K. N. K. Murthy and J. P. Deshmukh
6. Building construction by Jha and Sinha, Khann Delhi.