



Subject: Lab Safety and Management-DETC13111

Type of course: Skill Enhancement Course

Prerequisite: Students should have a basic knowledge about chemical lab.

Rationale: The Prerequisite provide the foundation for understanding the lab safety and how to manage lab chemical engineering

Teaching and Examination Scheme:

Teaching Scheme			Credits C	Examination Marks					Total Marks
CI	T	P		Theory Marks		Practical Marks		CA	
				ESE	MSE	V	P	ALA	
0	0	4	2	00	00	10	40	50	100

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.

List of practical :

Unit No.	Course content	Hrs	% Weight age
1	Solid, Liquid and Gas handling Sample of solid and liquid provide to student, student write down how to handle and which type of incident happening whether it used, faculty guide to student.	15	25
2	MSDS Datasheet Student get sample of organic and inorganic material and write down samples characteristic such as density, boiling point/melting point, ignition point, purity, hazardous characteristic, impurity, understand mineral acids handling etc.	15	25
3	Fire Safety Mock drill of fire in small scale and faculty guide how to handle typical case during fire in solid, liquid, and gas content as well as different type of	15	25

	fire extinguisher used during different types of fire, student not down in journal.		
4	Lab management Student seen lab and write lab manual of organic chemicals, inorganic chemicals, special category chemicals, How to arrange mineral acids, lab cleaning, waste management of wet and dry wastage etc.	15	25

Continuous Assessment:

Sr. No	Active Learning Activities	Marks
1.	How handle chemicals in big scale Student find out big scale chemicals handling from reference book or from web portal and note down in book and upload GMIU web portal	10
2.	MSDS in chemical lab Student find out ethanol MSDS and submit report on GMIU web portal	10
3.	Different types of fire extinguisher Student find out different types of fire extinguisher used in home, office, company and public place and report note down and upload in GMIU web portal	10
4.	Safety Challenge-I: What kind of actions you will take, if Strong acid spills in lab OR in skin. Prepare a report and upload it on GMIU Web Portal	10
5.	Safety Challenge-II: What kind of actions you will take, if fire seen in LPG gas cylinder. Prepare a report and upload it on GMIU Web Portal	10
Total		50

Suggested Specification table with Marks (Theory): NA

Distribution of Theory Marks (Revised Bloom's Taxonomy)						
Level	Remembrance (R)	Understanding (U)	Application (A)	Analyze (N)	Evaluate (E)	Create (C)
Weight age	NA	NA	NA	NA	NA	NA

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	Able to manage lab during lab work as well as workplace
CO2	realize any types of chemicals MSDS
CO3	Understand what precaution is necessary during handling chemicals
CO4	Able to understand lab management

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] Laboratory manuals , b bhushan cbse, aps books
- [2] laboratory management skills, gullybaba ignou baegh
- [3] chemical technician, de gruyter text book
- [4] Chemical Safety in the Laboratory By Stephen K.Hall CRC Press

