

ELECTIVE MODULE FOR NORMAL (TECHNICAL) STUDENTS

Module Title: Basic Process Safety

Duration: 30 hours
(10T 20P)

Pre-requisite: Nil

Aims of Module

- (i) To create a learning interest in the world of safety and practical skills in handling chemical spillage, rendering first aid, monitoring of environment and fire fighting.
- (ii) To expose students to a possible career in the Process industry by providing them with the fundamental skills and knowledge required in Process safety.

Learning Outcomes

At the end of the module, students will be able to:

- (a) Read and identify chemicals' properties from the MSDS
- (b) Handle chemical spillage
- (c) Carry out tests on environmental parameters
- (d) Perform fire fighting
- (e) Rendering Basic First Aids
- (f) Understand the knowledge and skills requirements of a Process technician.

Module Outline

Students will be aware of safety hazards at home and in the industries. They will be trained to observe safety rules when working with chemicals and equipments, understand simple chemical structures and properties, perform basic lab test on environmental parameter, rendering basic first aids and fire fighting skills.

Outline of Module Syllabus

<u>Item</u>	<u>Technical Skills/Knowledge</u>	<u>Instructional Hours</u>
	<u>Theory (include some practical demonstration and practices also)</u>	T=Theory P=Practical
1	Describe the various types of safety hazards in the home and how these can be minimized	1T
2	Describe the various types of safety hazards in a process plant and how these can be minimized.	1T
3	Describe the importance and various types of personal protective equipment that must be worn in a process plant.	1T
4	Explain what is a Material Safety Data Sheet (MSDS) and the different symbols on a MSDS.	1T

5	Describe the importance of proper procedure and safety precautions to be taken in responding to a Chemical Spillage in a process plant.	1T	6P
6	Explain what is a First Aid Kit and the usage of the items in a First Aid Kit.	1T	
7	Basic First Aid.		4P
8	Describe the chemistry of fire and principles of fire fighting.	1T	
9	Describe fire alarms, sprinklers, fire hose systems and fire extinguishers.	1T	
10	Use of fire extinguisher.		1P
11	Use of fire hose-reel.		1P
12	Use of Self Contained Breathing Apparatus (SCBA).		3P
13	Describe the various contributions to pollution by industries and how these can be minimized.	1T	
14	Describe monitoring equipment and testing equipment for environmental parameters and the potential pollution hazard resulting from ineffective environmental monitoring.	1T	5P
	Total	10T	20P

Teaching and Learning Approaches

Based on the needs and profile of the NT pupils, the theory will consist of 10 hours and practical training will consist of 20 hours, with an emphasis on group learning as well as individual learning. Students' interest will be sustained through the use of a wide variety of learning activities, including discussions on safety hazards at home and in industries, hands-on practice and constructing simple process safety projects.

For the practical sessions, students will learn to use the tools and equipment to render first aid, environmental monitoring and fire fighting. Student will also acquire knowledge on how to handle chemical spillage at home and in industries..

Completion Criterion

Students will be deemed to have successfully completed the module if they score the average marks of 50 for the 3 assessments. The guidelines for the assessments are given below.

<u>Assessment Component</u>	<u>Assessment Guidelines</u>
(i) <u>Written Assessment 1</u> Basic Process Safety (20%)	20 MCQ - Marks will be awarded for any correct answer given.
(ii) <u>Assessment 2</u> Render First Aid (30%)	Marks will be awarded for using the correct first aid kit and demonstrating the right approach and method.
(iii) <u>Assessment 3</u> Project (One to be identified from the list) (50%)	Marks will be awarded for the quality of reports on findings and presentation skills.

Target Audience

Sec 3 / 4 Normal (Technical) students

Class Size

20 students per class

Duration

30 instructional hours

Certification

ITE Certification of Attendance will be issued upon successful completion of the course. ITE Certificate of Achievement will be issued upon students meeting the assessment criteria.