UNIVERSITI TEKNOLOGI MARA

CHM323: CHEMISTRY LABORATORY SAFETY

Course Name (English)	CHEMISTRY LABORATORY SAFETY APPROVED
Course Code	CHM323
MQF Credit	3
Course Description	This is an introductory chemistry laboratory safety course providing a foundation on the general safety guidelines to ensure a safe environment while working in the laboratory. Topics such as quality systems in chemical laboratories will facilitate the mutual recognition of analytical data between laboratories and trading partners in relation to regulations.
Transferable Skills	1. Reflective Learner 2. Systematically Inquisitive
Teaching Methodologies	Lectures, Discussion
CLO	CLO1 State, discuss and practice safety rules in the general chemistry laboratory CLO2 Describe the emergency procedures in the laboratory and interpret the Material Safety Data Sheet (MSDS) CLO3 Describe and explain the functions and objectives of the Occupational Safety and Health Act (OSHA) CLO4 Discuss and describe quality systems and good laboratory practice in chemical laboratories
Pre-Requisite Courses	No course recommendations

Topics
1. Safety and Safety Awareness 1.1) Definition of safety, accident, hazards and risks 1.2) Some accidents of the past and lessons to be learnt 1.3) Safety awareness policy and training
2. General Safety Rules 2.1) Safety rules for the chemistry laboratory: do's and don'ts 2.2) First aid and emergency procedures
3. Potential Hazards in the Chemistry Laboratory 3.1) Chemical 3.2) Electrical 3.3) Radiation
4. Basic Laboratory Equipment and Techniques 4.1) Glassware. handling of chemicals and basic measurements - beakers, pipettes, flask 4.2) Basic separation technique - centrifuge, filtration, distillation
5. Safety and Personal Protective Equipment (PPE) 5.1) PPE - examples: google, lab coat, gloves, shoes, respirator 5.2) Safety equipment - fire extinguisher, safety shower, eye wash, first aid kit, fire alarm, exit door
6. Occupational Safety and Health Act (OSHA) 1994 6.1) Introduction to the aims and objectives of OSHA 6.2) Relevant regulations to OSHA 6.3) Chemical Industrial Major Accident Hazard Regulation, 1996 6.4) Classification, Packaging and Labelling of Hazardous Chemical Regulation, 1998 6.5) Use and Standard of Exposure of Chemical Hazardous to Health Regulation, 2000 6.6) Notification of Accident, Dangerous Occurrence, Occupational Poisoning and Occupational Disease, Regulation 2004

7. Material Safety Data Sheet (MSDS) 7.1) Examples of MSDS 7.2) Interpretation of MSDS
8. Quality Systems in Chemical Laboratories 8.1) Quality Systems 8.2) Quality Systems Documentation 8.3) Good Laboratory Practice (GLP) Requirements 8.4) Auditing and Assessing Quality Systems 8.5) Types of Quality Standards for Laboratories 8.6) Principles of GLP Compliance

Assessment Breakdown	%
Continuous Assessment	50.00%
Final Assessment	50.00%

Details of Continuous Assessment

Assessment Type	Assessment Description	% of Total Mark	CLO
Assignment	n/a	15%	CLO1 , CLO4
Presentation	n/a	15%	CLO3
Test	n/a	20%	CLO1 , CLO2 , CLO3 , CLO4

Reading List

Reference Book Resources

- **Thomas, Charles. E 2007, *Safety, Health and Environment for Process Te*, Thomas Delmar Learning**
- **Wentz, Charles A., 1999, *Safety, Health and Environmental Protection*, McGraw-Hill**
- **OSHA 1994, *Occupational Safety and Health Act 1994***
- **Crosby, N.T., Day, J.A. 1995, *Quality in the Analytical Chemistry Laborator*, John Wiley & Sons**
- **Funk, W., Dammann, V. and Donnevert, G. 1995, *Quality Assurance in Analytical Chemistry*, John Wiley & Sons**
- **Goetsch, David L. 2005, *Occupational Safety and Health for Technologi*, Pearson Prentice Hall**

Article/Paper List: This Course does not have any article/paper resources

Other References: This Course does not have any other resources