



UNIVERSITI TEKNOLOGI MARA

CMT115: LABORATORY SAFETY AND TECHNIQUES

Course Name (English)	LABORATORY SAFETY AND TECHNIQUES APPROVED
Course Code	CMT115
MQF Credit	2
Course Description	An introductory course in quality control, quality assurance and safety in industry which include an overview of ISO, approach in PDPC during problem solving and seven tools involved in quality control process. Safety in industry will be covered at the end of this course including introduction of OSHA, laboratory hazard, risks and safety equipment in industry and laboratory.
Transferable Skills	1. Transfer the fundamental knowledge of quality control, quality assurance and safety issues to solve problems in chemical related activities 2. Able to demonstrate effective writing in quality control, quality assurance and safety issues in chemical related activities.
Teaching Methodologies	Lectures, Web Based Learning, Discussion, Presentation
CLO	CLO1 Apply the basic knowledge of quality control, quality assurance and safety issues to solve problems in chemical related activities. CLO2 Perform basic practical skills related to safety issues in chemical related activities. CLO3 Demonstrate effective writing in quality control, quality assurance and safety issues in chemical related activities.
Pre-Requisite Courses	No course recommendations
Topics	
1. Introduction to ISO 1.1) 1.1 An overview of ISO 1.2) 1.2 Objectives of ISO 1.3) 1.3 Type of ISO including ISO 14000, 14001, 19011 1.4) 1.4 Registration of ISO 1.5) 1.5 Audit process that involves ISO	
2. Introduction to quality control 2.1) 2.1 Introduction to PDCA cycle 2.2) 2.1.1 Plan 2.3) 2.1.2 Do 2.4) 2.1.3 Check 2.5) 2.1.4 Act 2.6) 2.2 7 basic QC tools 2.7) 2.2.1 Check sheet 2.8) 2.2.2 Graph 2.9) 2.2.3 Pareto Chart 2.10) 2.2.4 Histogram 2.11) 2.2.5 Cause and Effect diagram (Ishikawa Diagram) 2.12) 2.2.6 Scatter Diagram 2.13) 2.2.7 Control Chart	
3. Introduction to safety 3.1) 3.1 History of OSHA 3.2) 3.2 Development of OSHA in Malaysia 3.3) 3.2.1 Definition and part of OSHA Act 1994 3.4) 3.2.2 Safety and health management regulations 3.5) 3.3 Laboratory hazard and risks 3.6) 3.3.1 Identification & classification of hazardous chemical 3.7) 3.3.2 Hazards pictograms	

3.8) 3.3.3 Type of laboratory hazards and its prevention
3.9) 3.4 Laboratory safety equipment
3.10) 3.4.1 Chemical fume hoods
3.11) 3.4.2 Personal protective equipment (PPE)-(safety clothing & lab coats, respirators & dust/vapor masks, Goggles and faces shield, plastic vinyl booties, disposable vinyl gloves)
3.12) 3.4.3 Emergency control devices- fire extinguisher, safety shower eye wash, first aid kit, fire alarm, exit door.

Assessment Breakdown		%	
Continuous Assessment		100.00%	

Details of Continuous Assessment	Assessment Type	Assessment Description	% of Total Mark	CLO
	Assignment	Online Assignment	20%	CLO3
	Online Quiz	Online Quiz	20%	CLO1
	Test	Online Test	40%	CLO1
	Written Report	Written Report and Video	20%	CLO2

Reading List	Reference Book Resources
	<ul style="list-style-type: none"> • Amitava Mitra 2016, <i>Fundamentals of Quality Control and Improvement</i>, 4 Ed., John Wiley & Sons [ISBN: 978-1-118-705] • Alan S. Morris 2004, <i>ISO 14000 Environmental Management Standards, Engineering and Financial Aspects</i>, 5 Ed., John Wiley & Sons [ISBN: 0-470-85128-7] • Goetsch, David L. 2015, <i>Occupational Safety and Health for Technologists, Engineers and Managers</i>, 8 Ed., Pearson Prentice Hall. New Jersey [ISBN: 978-013700916] • MDC Publishers Sdn Bhd 2015, <i>Occupational Safety and Health Act and Regulations / Akta Keselamatan dan Kesihatan Pekerjaan dan Peraturan-peraturan 22</i>, MDC Publishers [ISBN: 9789677014560] • Robert .Hill Jr, David C. Finster 2016, <i>Laboratory Safety For Chemistry Students</i>, 2 Ed. [ISBN: 978-111902766] • Anastasia Zakharyuta, Canhan Sen, Merve Senem 2016, <i>Laboratory Safety Handbook</i> [ISBN: 9786059178594] • David L. Goetsch 2018, <i>Occupational safety and health for technologies, engineers and managers</i>, 9 Ed. [ISBN: 13978-0134695]
Article/Paper List	This Course does not have any article/paper resources
Other References	This Course does not have any other resources