



## UNIVERSITI TEKNOLOGI MARA

### CHM573: INDUSTRIAL CHEMISTRY

<b>Course Name (English)</b>	INDUSTRIAL CHEMISTRY <b>APPROVED</b>
<b>Course Code</b>	CHM573
<b>MQF Credit</b>	2
<b>Course Description</b>	This course will interactively engage the students cognitively and scientifically in areas of processing of natural resources such as petroleum, palm oil, and natural rubber into industrial products. Other industrial processes discussed include palm oil production, petroleum production, extraction of metals, and surface coating industries. Student will be exposed to the safety and hazard study in the workplace and have a better understanding with the application of the personal protective equipment that available in the workplace. Students will define concept and applications of the processes into a reports after pay an industrial visit to the processing plant and industry. Lecture sessions employ a mixture of lectures and active learning (self and peer discussions). The outcomes shall be assessed through a variety of tools which include the traditional paper examination (tests and finals), plant visit/industrial talk report and classroom engagement like student presentation.
<b>Transferable Skills</b>	Students should be able to describe the chemical and physical processes applies in the transformation of raw material to finished product.
<b>Teaching Methodologies</b>	Lectures, Field Trip, Presentation
<b>CLO</b>	CLO1 Describe the chemical processing in the chemical industries and the correct use of personal protective equipment. CLO2 Distinguish the processes involved in the chemical industries CLO3 Discuss knowledge in class to real activities in chemical industries
<b>Pre-Requisite Courses</b>	No course recommendations
<b>Topics</b>	
<b>1. Industrial Chemistry</b> 1.1) World major chemical industries 1.2) Characteristics of the chemical industry 1.3) Chemical Industry in Malaysia 1.4) Characteristics of the industry in Malaysia 1.5) Natural sources of chemicals in Malaysia	
<b>2. Petroleum and Gas Industry</b> 2.1) Origin of petroleum 2.2) Processing and refining of petroleum 2.3) Importance of petroleum industry 2.4) Petrochemicals 2.5) Natural gas	
<b>3. Palm Oil Industry</b> 3.1) Introduction 3.2) Oil palm plantation 3.3) Palm oil mills 3.4) Palm oil refining 3.5) Oleochemical industry	
<b>4. Natural Rubber Industry</b> 4.1) Processes and Applications	
<b>5. Metals and Alloy Industry</b> 5.1) Extraction of metals	

**6. Coating Industry**

- 6.1) Introduction to paint industry
- 6.2) Water based paint
- 6.3) Solvent based paint
- 6.4) Manufacturing process of paint
- 6.5) Applications

**7. Introduction to Safety**

- 7.1) Safety and loss prevention
- 7.2) Hazard identification
- 7.3) Risks
- 7.4) Personal protective equipment (PPE)
- 7.5) Fire and explosion

Assessment Breakdown	%
Continuous Assessment	50.00%
Final Assessment	50.00%

Details of Continuous Assessment	Assessment Type	Assessment Description	% of Total Mark	CLO
	Assignment	Report from Industrial visit/industrial talk	10%	CLO1
	Presentation	Presentation	10%	CLO3
	Test	n/a	30%	CLO1

Reading List	Reference Book Resources	<ul style="list-style-type: none"> <li>• Charles A. Wentz 1999, <i>Safety, Health, And Environmental Protection</i>, McGraw Hill Singapore</li> <li>• Charles E. Thomas 2007, <i>Safety, Health, and Environment for Process Technicians</i>, 2nd Ed., Thomson Delmar Learning New York</li> <li>• Daniel A. Crowl &amp; Josepg F. Louvar 2002, <i>Chemical Process Safety ; Fundamentals with applications</i>, 2nd Ed., Prentice Hall International</li> <li>• Fahim, M. A., Alsahhaf, T. A., &amp; Elkilani, A. 2010, <i>Fundamentals of petroleum refining.</i>, Elsevier Amsterdam</li> <li>• Oi-Ming, L., Chin-Ping, T., &amp; Akoh, C. C. 2012, <i>Palm Oil :Production, Processing, Characterization and Uses</i>, AOCs Press Urbana</li> </ul>
Article/Paper List	Reference Article/Paper Resources	<ul style="list-style-type: none"> <li>• Schwope, A. D., &amp; Janssen, L. 2000, Personal Protective Equipment, <i>Protecting Personnel at Hazardous Waste Sites</i>, 251</li> </ul>
Other References	This Course does not have any other resources	