



UNIVERSITI TEKNOLOGI MARA

CMT307: INDUSTRIAL PROCESS

Course Name (English)	INDUSTRIAL PROCESS APPROVED
Course Code	CMT307
MQF Credit	4
Course Description	Industrial health and safety and environmental pollution are the main issues in manufacturing process industries. Knowledge on processing of materials such as cement, palm oil, petroleum and paint are discussed. Students are exposed to the chemically related manufacturing industries in Malaysia. Students will have the opportunity to go for plant visits or field trips or attend a career talk.
Transferable Skills	Demonstrate ability to communicate clearly and confidently, dealing with change and meeting new challenges in any given set-up. Demonstrate ability to use scientific knowledge to conduct analysis, investigate and solve chemical and industrial-related problems.
Teaching Methodologies	Lectures, Blended Learning, Lab Work
CLO	CLO1 Explain the manufacturing processes involved in petroleum, palm oil, paint and cement industries. CLO2 Illustrate the manufacturing steps involved in petroleum, palm oil, paint and cement industries. CLO3 Relate different aspects of environmental pollution, treatment methods and safety regulations. CLO4 Prepare a report on the relationship between processing steps, safety regulations and environmental pollution in manufacturing industries, based on problem issue in the industries
Pre-Requisite Courses	No course recommendations
Topics	
1. Introduction to Fats and Oils 1.1) Chemistry of fats and oils 1.2) Chemical reactions involving fats and oils 1.3) Analysis of fats and oils	
2. Environmental Pollution 2.1) Water Pollution (Sources of water pollution, Classes of water pollutants, Water pollution monitoring, Water pollution control methods) 2.2) Sewage Treatment (Purpose of sewage treatment, Preliminary Treatment, Primary Treatment, Secondary Treatment, Sludge Treatment) 2.3) Air Pollution (Sources of air pollution, Air pollution monitoring, Air pollution control equipment) 2.4) Solid Waste Management (Definition of terms, Solid waste management methods) 2.5) Hazardous Waste Management (Classification of hazardous wastes, Treatment and disposal methods)	
3. Introduction to Industrial Health and Safety 3.1) Definition of terms 3.2) Types of hazards 3.3) Safety equipment (Personal Protective Equipment (PPE) and emergency control devices) 3.4) Observance of safety in industry (FDA, EPA, OSHA, DOSH, NIOSH)	
4. Palm Oil Industry 4.1) Introduction 4.2) Oil Palm Plantations 4.3) Palm Oil Mills 4.4) Palm Oil Refining 4.5) Oleochemical Industry	

5. Petroleum Industry

- 5.1) Introduction
- 5.2) Origin of petroleum
- 5.3) Petroleum prospecting
- 5.4) Petroleum processing and refining
- 5.5) Natural Gas (Definition, Natural Gas Processing)

6. Special Topics

- 6.1) Paint Industry (Introduction, Paint properties, Paint composition, Paint processing, Classification of paint)
- 6.2) Cement Industry (Introduction, Types of cement, Cement production)

Assessment Breakdown	%
Continuous Assessment	50.00%
Final Assessment	50.00%

Details of Continuous Assessment	Assessment Type	Assessment Description	% of Total Mark	CLO
	Assignment	Assignment in PowerPoint slide presentation	15%	CLO2
	Online Quiz	Topics : environmental pollution, treatment methods and safety regulations.	10%	CLO3
	Practical	using video simulation and write the reports	25%	CLO4

Reading List	Reference Book Resources
	<ul style="list-style-type: none"> • Versilind and Morgan 2004, <i>Introduction to Environmental Engineering</i>, 2 Ed., Thomson Brooks-Cole • Heaton, C.A.(editor) 1991, <i>An Introduction to Industrial Chemistry</i>, 2 Ed., Blackie, Glasgow and London • Miller, G.T. 1997, <i>Environmental Science</i>, 6 Ed., Wadsworth Publishing Co. • Manahan, S.E. 1994, <i>Environmental Chemistry</i>, 6 Ed., Lewis Publishers • Keller and Botkin 2008, <i>Essential Environmental Science</i>, 1 Ed., John Wiley & Sons • <i>Other relevant chemistry and chemical engineering textbooks, and organic laboratory manuals or journals, as well as current periodicals.</i>

Article/Paper List	This Course does not have any article/paper resources
Other References	This Course does not have any other resources