



UNIVERSITI TEKNOLOGI MARA

CMT655: OILS AND FATS CHEMISTRY AND TECHNOLOGY

Course Name (English)	OILS AND FATS CHEMISTRY AND TECHNOLOGY APPROVED
Course Code	CMT655
MQF Credit	3
Course Description	Oleochemicals are made from vegetable oil and animal fats feedstocks. They range from fatty acids, glycerine, alcohols and metallic soaps to fatty nitriles and their derivatives. This course is designed to provide the foundation for various processes involve in oleochemistry. It covers the formation of basic oleochemicals such as Fatty Acids, Fatty Acid Methyl Esters (FAME), Fatty Alcohols, Fatty Amines and glycerol via various chemical reactions. It also includes the production of upstream chemical products derived from oleochemical feedstocks. The applications of oleochemicals products is also discussed which may include a visit to the oleochemical-related organization in Klang Valley.
Transferable Skills	The knowledge and importance of basic oleochemicals and its derivatives in industries
Teaching Methodologies	Lectures, Presentation
CLO	CLO1 Explain the source, physical and chemical properties of fats and oils CLO2 Discuss the production, modification and application of fats and oils in industries CLO3 Demonstrate the ability to communicate effectively through presentation on fats and oils-related industries CLO4 Write a scientific report on fats and oils-related industries
Pre-Requisite Courses	No course recommendations
Topics	
1. Introduction to oleochemistry 1.1) Lipids: classification, sources, physicochemical properties and functional properties of oil/ fats 1.2) Application of oleochemistry	
2. Fatty acids and derivatives 2.1) Types and structures of fatty acids and its derivatives 2.2) Fatty Acid Methyl Esters: introduction, production, applications 2.3) Fatty alcohols: introduction, production, applications 2.4) Fatty amines: introduction, production, applications	
3. Glycerol 3.1) Introduction 3.2) Production 3.3) Applications	
4. Pre-treatment and fat splitting of fatty acids 4.1) Pre-treatment of fatty acids: Refining, Degumming, Neutralization, Bleaching and Deodorization 4.2) Fat splitting: Twitchell, Batch Autoclave, Continuous and Enzymatic processes	
5. Oil modification processes 5.1) Hydrogenation 5.2) Interesterification 5.3) Fractionation	
6. Application of oils and fats in food industry 6.1) Margarine and butter 6.2) Edible oil 6.3) Food-grade surfactants	

7. Application of oils and fats in non-food industry

7.1) Soaps and detergents

7.2) Personal care and pharmaceutical products

7.3) Biofuel and lubricants

8. Application of palm oil in food and non-food industries

8.1) Specialty products produced from palm oil

Assessment Breakdown	%
Continuous Assessment	60.00%
Final Assessment	40.00%

Details of Continuous Assessment	Assessment Type	Assessment Description	% of Total Mark	CLO
	Assignment	Prepare a group presentation in the form of poster on fats and oils-related industries - Topic 8	15%	CLO3
	Assignment	Prepare a scientific report in the form of poster on fats and oils-related industries - Topic 8	15%	CLO4
	Test	Test - 30% of the overall assessment - Topics 1, 2, 3	30%	CLO1

Reading List	Reference Book Resources	<ul style="list-style-type: none"> F. D. Gunstone 2004, <i>The Chemistry of Oils and Fats</i>, Taylor & Francis US [ISBN: 1405116269] Richard John Hamilton, A. Bhati 1980, <i>Fats and Oils</i>, Elsevier Science Limited [ISBN: 0853349150]
Article/Paper List	This Course does not have any article/paper resources	
Other References	This Course does not have any other resources	