KIE 356/3 – Food and Palm Oil Chemistry

Course Objectives:
1. To know about various food sources and types of food.
2. To understand Palm Oil Chemistry.
3. To acquire skill in food analysis of edible oils.

Topic	Content	Number of lecture hours	Expected outcome – upon completion of this course, the student should be able to:
1. Carbohydrates	• Classification and structures • Reactions including hydrolysis, dehydration and thermal degradation	6	• Understand the chemical changes during processing of carbohydrates.
2. Proteins	• Classification and structures • General physico-chemical properties • Chemical reactions of amino acids and protein • Protein denaturation	6	• Understand the chemical changes during processing of proteins.
3. Food Flavour	• Types of food flavours and their chemical structures	3	• Identify the sources of flavour, production and analysis.

Topic	Content	Number of lecture hours	Expected outcome – upon completion of this course, the student should be able to:
4. Food Additives	• Acids and bases • Chelating agents • Antioxidants • Antimicrobial agents • Sweeteners, stabilizers, thickeners and texturizers	3	• Understand the role of acids and bases in food processing/preparation. • Understand the use of different chelating agents in food and their roles. • Understand the different antioxidants and their mechanistic action. • Understand the use of different common antimicrobial agents in food and their antimicrobial properties. • Give a few examples and understand their functions.
5. Oil and Fats	• Classification and composition • Physical and chemical properties • Chemistry of frying • Oxidation and antioxidants • Hydrogenation, interesterification • Refining of palm oil	6	• Recognize that oil and fats are triglycerides with different fatty acids. • Understand the effect of fatty acids on the physical and chemical properties. • Understand the chemical changes during frying. • Write the mechanisms of thermal- & photo-oxidation and their oxidation products. • Understand the chemical actions of the different types of antioxidants. • Write the mechanisms and products of hydrogenation and interesterification. • Understand the physical and chemical refining processes.

Topic	Content	Number of lecture hours	Expected outcome – upon completion of this course, the student should be able to:
6. Practical Work	• Determination of quality parameters of edible oils	18	• Determine the following parameters that measure the quality of oils: - Volatile materials - Impurities - Peroxide value - Anisidine value - Iodine value - Carotene content - Cloud point
	TOTAL	**42**	