

❖ **Food Lipids (FDSCTE 7650)**

Department	Food Science & Technology
Course Title	Food Lipids
Credit	U – 2
Semester	Spring Course
Level	Graduate
Instructor	Farnaz Maleky

Course description:

This course will be offered as a 7-week graduate-level course in the first session of Spring semester. It will provide the students an understanding of the chemistry and physical properties of lipids and their effects on quality and functional properties of food systems.

Learning objectives and outcomes

- Providing an advanced understanding of the sources and industrial processing of edible fats and oils.
- Providing the basic principles of lipid chemistry and understanding the interactions of lipids with other food components.
- Studying the physical chemistry of fats and oils and their contributions to food systems.
- Developing a basic understanding of the kinetics fats structure formation, solidification, and the effects of lipids on the physical properties of foods during processing and storage.
- Introducing the techniques used for lipid analysis to examine their roles in food systems.
- Learning how to have a better selection of raw materials and ingredients for food products.

Course Syllabus:

Week 1:

- Lipids sources, definition, and composition
- Lipids classifications and triacylglycerols characterization

Week 2

- Processing and industrial extractions
- Lipid reactions and process of modifications

Week 3

- Lipid oxidation, autoxidation,
- Oxidation measurements techniques, control of oxidation

Week 4

- Lipids crystallization and polymorphism

Week 5

- Food Emulsions, definitions and classifications

- Emulsions stability, emulsifications, and food emulsifiers

Week 6

- Lipids physical properties and measurement techniques
- Production of fat based food

Week 7

- Lipids in dairy
- Lipids in bakery and frying food

References:

- Food Lipids: Chemistry, Nutrition, and Biotechnology, Editor: C. C. Akoh; D. B. Min, CRC Press, Third edition , 2008
- Chemical and Functional Properties of Food Lipids, Editor: Z. E. Sikorski; A. Kołakowska, CRC Press, Second edition, 2003.
- Fennema’s Food Chemistry, Editor: S. Damodaran; K.L. Parkin ; O. R, CRC Press,Fourth edition, 2007
- Structure-Function Analysis of Edible Fats, Editor A.G. Marangoni, AOCS Press, 2012
- Lipid Oxidation, Second edition, Editor E.N. Frankel. The Oily Press, 2010

Grading:

4 Quizzes	70%
Paper Discussion	10%
Final Exam	20%

GRADING SCALE:

A	A-	B+	B	B-	C+	C	C-
94-100	90-93	88-92	83-87	78-82	73-77	68-72	60-67

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