Fat and Oils Technology and Quality Control
Course Outline

General

SCHOOL	Agricultural Sciences
DEPARTMENT	Food Science and Nutrition
ACADEMIC LEVEL	*Undergraduate*
CORSE CODE	ME815

CORSE CODE	ME815	**SEMESTER**	8th
COURSE TITLE	Fat and Oils Technology and Quality Control (Instructor: S. Lalas)		

INDEPENDENT TEACHING ACTIVITIES *In case credits are awarded separately for different parts of the course (e.g., Lectures, Laboratory Exercises, etc.), if credits are awarded as a whole for the entire course, specify the weekly teaching hours and the total credits.*	**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures	3	5
Laboratory Exercises	3	

COURSE TYPE **Background, General Knowledge, Scientific Area, Skill Development**	Scientific Area, Skill Development
PREREQUISITE COURSES:	-
LANGUAGE OF INSTRUCTION AND EXAMINATION:	Greek
COURSE OFFERED TO ERASMUS STUDENTS:	Yes
COURSE WEBSITE (URL):	-

LEARNING OUTCOMES

Learning Outcomes
The course aims to understand the chemistry of lipids present in foods, the chemical reactions that occur during the processing, storage, and cooking of foods. Additionally, it provides knowledge for selecting methods and conditions to either prevent undesirable changes or promote desirable changes that occur in foods. Finally, it teaches appropriate methods for analyzing lipidss to determine their identity (authenticity) or quality. Ultimately, the course aims to prepare students to be responsible for quality control laboratories in the fats and oils industries and to plan, organize, and manage production in these industries. Upon successful completion of the course, the student will be able to: • Understand the structure, chemical, and physical properties of lipids.   • Recognize the qualitative characteristics of various fats and oils used in foods (e.g., olive oil, seed oils, margarines, bakery fats).   • Control the structure of lipids and non-glyceride components.   • Monitor the chemical and physical properties and alterations of fats and oils.   • Detect adulteration in fats and oils, control oilseeds, perform sampling, and assess the quality of frying oils, among other tasks.   • Learn the extraction methods for plant and animal origin fats and the processing of fats and oils.   • Understand methods for making margarines and shortenings, fat and oil substitutes, mayonnaise production, and by-products of fats and oils.

General Skills
Searching, analyzing, and synthesizing data and information using the necessary technologies, making decisions, working autonomously, collaborating in teams, exercising critical thinking, engaging in theoretical thought, and having the ability to translate theory into practice

Course Content

1st Week: Introduction to fats & oils - Safety Issues

2nd Week: Components of food lipids

3rd Week: Physical properties

4th Week: Physical properties

5th Week: Chemical properties

6th Week: Chemical properties

7th Week: Alterations/Oxidation

8th Week: Alterations/Oxidation

9th Week: Antioxidants

10th Week: Saponification

11th Week: Fats & oils technology

12th Week: Fats & oils technology

13th Week: Food lipids & human diet

Teaching and Learning Methods - Evaluation

Teaching Method	Face-to-Face or Distance Learning
Use of Information and Communication Technologies	YES. The course lectures are supported by electronic slide presentations and other audio-visual materials. Supplementary notes are posted on the E-Class platform.

Teaching Organization - Workload Activities of the Semester	*Activity*	*Workload*
	Lectures	39
	Laboratory exercises	39
	Self-study	72
	Total Course Workload (25 hours of workload per credit):	150

Student Assessment	Examination Language: Greek. Students have access to supplementary notes posted on E-Class, but they also receive a textbook of their choice from those available in the EUDOXUS system. The final grade for the course is determined by 50% from the assessment of the theoretical part (lectures) and 50% from the laboratory exercises. The exams (Theoretical and Laboratory parts) include multiple-choice questions. Specifically: Written examination with multiple-choice questions in the case of in-person assessment. Electronic examination through E-Class with multiple-choice questions in the case of distance assessment.

RECOMMENDED BIBLIOGRAPHY

- Recommended bibliography: - Technology - Quality of Fats and Oils, Ioannis Tsaknis, A. TZIOLAS & SONS PUBLICATIONS.
          - OLIVE OIL, Apostolos Kyritsakis, COPY CITY PUBLICATIONS I.K.E..

- Relevant scientific journals (indicative):
- Food Chemistry, Elsevier.
- Journal of American Oil Chemists' Society, Springer.
- European Food Research and Technology, Springer.
- Journal of Food Composition and Analysis, Elsevier.
- International Journal of Food Science and Technology, Blackwell Publishing.
- Food and Bioprocess Technology, Springer.
- European Journal of Lipid Science and Technology, Wiley.