COURSE OUTLINE

1. GENERAL

SCHOOL	FOOD and NUTRITIONAL SCIENCES		
DEPARTMENT	FOOD SCIENCE and HUMAN NUTRITION		
STUDY LEVEL	Undergraduate		
MODULE CODE	3380	**SEMESTER**	4th
MODULE TITLE	FOOD BIOCHEMISTRY		

INDEPENDENT TEACHING ACTIVITIES	**WEEKLY TEACHING HOURS**	**ECTS**
Lectures	3	3
Tutorial Courses	2	2

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	Special background
PREREQUISITE COURSES:	Organic Chemistry, Food Chemistry, Biochemistry
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	YES (in English)
COURSE WEBSITE (URL)	https://oeclass.aua.gr/eclass/courses/ETDA133/

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The course is **a basic introductory course** on concepts of Food Biochemistry. **The course aims** at studying and understanding of the biochemical and physicochemical processes and changes that take place during the conversion of the raw material, such as meat, milk, cereals, fruits and vegetables, into a food product or a new type of food. Finally, the course aims at training students in basic methodological and experimental approaches in the field of Food Biochemistry.

Upon successful completion of this course, students will be able to:

- Understand the basic biochemical changes during food processing and production
- Integrate the knowledge in designing new methodological and experimental approaches in the field of Food Science and Technology
- Integrate the knowledge in the study and understanding of other related sciences
- Study independently and critically
- Present their knowledge in specific and non-specific audiences with completeness and clarity

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology	*Project planning and management*
Adapting to new situations	*Respect for difference and multiculturalism*
Decision-making	*Respect for the natural environment*
Working independently	*Showing social, professional and ethical responsibility and sensitivity to gender issues*
Teamwork	*Criticism and self-criticism*
Working in an international environment	*Production of free, creative and inductive thinking*
Working in an interdisciplinary environment	*……*
Production of new research ideas	*Others…*
	……

- Search, analysis, and synthesis of data and information, using the necessary technologies
- Generation of new research ideas
- Work in an interdisciplinary environment
- Exercise of critical thinking and self-reflection
- Promotion of free, creative, and inductive thinking
- Independent work
- Teamwork

3. MODULE CONTENT

MEAT AND FISH

1. Connective tissue, contractile proteins and myoglobin
2. The muscle contraction
3. Post-mortem biochemical changes in muscles

MILK

1. Biosynthesis of milk
2. Composition of milk
3. Biochemical transformations in dairy products

CEREALS

1. Structure and composition of the seeds
2. Biochemical reactions in beer brewing
3. Biochemical reactions in bread-making

FRUITS AND VEGETABLES

1. Climacteric respiration
2. Colour and structure changes
3. Aroma and taste

BROWNING REACTIONS

1. Phenolic compounds and enzymatic browning
2. Methods of controlling the enzymatic browning

4. TEACHING and LEARNING METHODS - Evaluation

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face or via Internet if needed

<table>
<tr><td>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY
Use of ICT in teaching, laboratory education, communication with students</td><td>1. E-material (CD)
2. Internet</td></tr>
<tr><td>TEACHING METHODS
The manner and methods of teaching are described in detail.
Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS</td><td><table><tr><th>Activity</th><th>Working load</th></tr><tr><td>Lectures</td><td>80</td></tr><tr><td>Tutorial Courses</td><td>45</td></tr><tr><td>Team Project</td><td></td></tr><tr><td>Field Trip /</td><td></td></tr><tr><td>Independent Study</td><td></td></tr><tr><td>Total
(25 h of working load per one ECTS)</td><td>125</td></tr></table></td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION
Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, multiple-choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other

Specifically defined evaluation criteria are given, and if and where they are accessible to students.</td><td>I. Written exams (100 %), including:
Answer Questions
Essays
Comparative Evaluation of Topics from Theory and Practical Courses</td></tr>
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5. BIBLIOGRAPHY

1. E. Tsakalidou (2025) Lectures on Food Biochemistry
2. Alais C. & G. Linden (1991) Food Biochemistry, Ellis Horwood Ltd., UK
3. Berg J.M., G.J. Gatto Jr., J. K. Hines, J. Beneken Heller, J.L. Tymoczko, L. Stryer (2025) Biochemistry, Crete University Press
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6. Eskin M.N.A. (1990) Biochemistry of Foods, Academic Press Inc., UK
7. Fennema O.R. (1996) Food Chemistry, Marcel Dekker Inc., NY
8. Hui Y.H. (2006) Food Biochemistry and Food Processing, Blackwell Publishing, Iowa, USA