COURSE OUTLINE

(1) GENERAL

SCHOOL	FOOD AND NUTRITIONAL SCIENCES		
ACADEMIC UNIT	FOOD SCIENCE AND HUMAN NUTRITION		
LEVEL OF STUDIES	*Undergraduate*		
COURSE CODE	3436	SEMESTER	9th
COURSE TITLE	FOOD PHYSICAL CHEMISTRY		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	WEEKLY TEACHING HOURS	CREDITS
Lectures & laboratory exercises	5	5
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	Skills development, specialised general knowledge
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	No
COURSE WEBSITE (URL)	https://w1.aua.gr/etda/en/courses/food-physical-chemistry/

(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 based on the subject of Food Physical Chemistry.

Its contents aim to the introduction of students to the basic terms of liquid and solid state, colloids, biopolymers, gels, emulsions and foams.

Upon successful completion of the course, the student will be able to understand the following:

• Understanding the basic properties of liquids, with emphasis on surface tension and viscosity, and their applications

• Information on various types of solids and mesomorphs

• Understanding the phenomenon of adsorption and its applications

• Applications of Resins (e.g. in the production of deionized water)

- Understanding the concept of colloid and biopolymer (hydrocolloid)
- Properties of colloids (flocculation, zeta potential)
- Biopolymer gels
- Preparation of biopolymer solutions and gels with desired properties
- Applications of biopolymers in the food industry
- Understanding the concept of emulsion
- Preparation of emulsions with desired properties
- Applications of emulsions in the food industry
- Introduction to foams and aerosols

In addition to a critical understanding of the principles and theories of Food Physical Chemistry, students will also acquire knowledge that includes elements from ongoing research studies on the subject. As a result, they will be able to understand the phenomena and tasks that characterize the study, processing and technology of Food and exploit their knowledge not only to new research goals but also to effectively resolving relevant to the subject topics/problems.

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
Adapting to new situations
Decision-making
Working independently
Team work
Working in an international environment
Working in an interdisciplinary environment
Production of new research ideas
Project planning and management
Respect for difference and multiculturalism
Respect for the natural environment
Showing social, professional and ethical responsibility and sensitivity to gender issues
Criticism and self-criticism
Production of free, creative and inductive thinking
……
Others…
…….

- Retrieve, analyze and synthesize data and information, with the use of necessary technologies
- Future research
- Make decisions
- Work autonomously
- Work in teams
- Project planning and management
- Be critical and self-critical

(3) SYLLABUS

1. Liquids (properties, surface tension)
2. Liquids (viscosity, Newtonian and non Newtonian liquids, thermodynamic conditions for liquid-vapour equilibrium)

3. Solids
4. Mesomorphs
5. Adsorption
6. Ion-exchange resins
7. Colloids (definition, types, electrolytes)
8. Colloids (properties, ζ-potential, flocculation)
9. Biopolymers
10. Biopolymer solutions and gels
11. Emulsions (definition, o/w and w/o emulsions, properties, stability)
12. Emulsions (emulsion theories, emulsifiers)
13. Foams

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face (Direct) learning, lab experiments
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Power point presentations, laboratory education, communication with the students via the open e-class
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*	
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.*	FOR THEORY I. Written Examination in Greek that includes right or wrong questions, short answer questions etc FOR LABORATORY I. Written Examination in Greek that includes right or wrong questions, short answer questions, problem solving (80%) II. Laboratory reports on the performed exercises (20%)

Activity	*Semester workload*
Lectures	26
Laboratory practice	39
laboratory essays writing	34
Private studying	26
Course total	*125*

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

-Lecture Notes for food physical chemistry, V. Evageliou (AUA)
-Laboratory Notes for food physical chemistry, V. Evageliou (AUA)

The students also receive the following book:
- Food physical chemistry, Ritzoulis C., Tziolas pubications, 2024

- Related academic journals:
Food Hydrocolloids, Colloids and Surfaces A