COURSE OUTLINE

1. GENERAL

SCHOOL	FOOD AND NUTRITIONAL SCIENCES		
ACADEMIC UNIT	FOOD SCIENCE AND HUMAN NUTRITION		
LEVEL OF STUDIES	BACHELOR OF SCIENCE		
COURSE CODE	3510	**SEMESTER**	5TH
COURSE TITLE	FOOD PRESERVATION		

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 and problem-solving tutorials	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*	Field of Science
PREREQUISITE COURSES:	Basic knowledge of Mathematics, Computing, Food Microbiology, Food Chemistry and Food Engineering
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO
COURSE WEBSITE (URL)	

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 the principles of food preservation. The course material includes Causes of food spoilage. General principles of food preservation. Thermal processing. Reaction kinetics of (thermal) destruction and quality deterioration of foods. Design of thermal processes. High hydrostatic pressure processing. Drying. Low temperature preservation (chilling, freezing). Emphasis is given to the design of thermal processes, which is used as a teaching model for other preservation technologies.

Upon successful completion of this course the student will be able to:

• Recognize the various food preservation technologies with an emphasis on the safety and quality of the final product.

• Explain the changes in food safety and quality based on the preservation technology used.

• Quantify the changes on the quality factors and safety parameters that take place in the product during the various preservation processes.

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…*
	……

Analyse and synthesize data and information
Work autonomously
Work in teams

3. SYLLABUS

1. Course Structure/Requirements. Introduction to Principles of Food Preservation.
2. Brief presentation of the methods of food preservation. Modern trends.
3. Introduction to thermal processes of foods. Heat resistance of microorganisms (and other heat-sensitive agents). Reaction kinetics (of thermal destruction).
4. Equivalent processes. Definition of the F process value. Optimization of thermal processes for the case of constant product temperature.

5. General principles and methods for F value determination. Time-temperature integrators (TTI). Application of TTI for the determination of the shelf life of products under refrigeration.
6. Determination of the required F value from "total destruction" data. Calculation of the process F value with mathematical methods for special cases.
7. Control and design of thermal processes. Calculation of the time required for commercial sterilization.
8. High Hydrostatic Pressure Processing. Principles, kinetic analysis, equipment. Similarities and differences with the analysis presented for the design and control of thermal processes.
9. Food preservation by cooling. Reaction kinetic. Determination of the shelf life of products stored under refrigeration.
10. Engineering aspects. Calculation of the time required for cooling of a product (at a given final temperature). Similarities and differences with the analysis presented for the design and control of thermal processes.
11. Food preservation by freezing.
12. Principles of food preservation by drying.
13. Summary. Topics of special interest.

4. TEACHING and LEARNING METHODS - EVALUATION

<table>
<tr><td>DELIVERY
Face-to-face, Distance learning, etc.</td><td>In class teaching (power point presentation and blackboard writing)
Theory and problem solving
Class notes</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY
Use of ICT in teaching, laboratory education, communication with students</td><td></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>Semester workload</th></tr>
<tr><td>Lectures</td><td>39</td></tr>
<tr><td>Laboratory/Problem solving sessions</td><td>26</td></tr>
<tr><td></td><td></td></tr>
<tr><td></td><td></td></tr>
<tr><td></td><td></td></tr>
<tr><td></td><td></td></tr>
<tr><td>Autonomous study</td><td>60</td></tr>
<tr><td>Course total</td><td>125</td></tr>
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<tr><td>STUDENT PERFORMANCE EVALUATION
Description of the evaluation procedure</td><td></td></tr>
</table>

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.*	I. Final written examination (100% of the final course grade in THEORY) that includes: ➢ Multiple choice questions or Right/Wrong questions ➢ Short answer questions ➢ Judgment questions ➢ Descriptive, assay type questions ➢ Calculation problems II. Final written examination (100% of the final course grade in LABORATORY) that includes: ➢ Calculation problems ➢ Judgment questions

5. ATTACHED BIBLIOGRAPHY

- Μπλούκας Ι., Επεξεργασία και Συντήρηση Τροφίμων, Εκδόσεις ΣΤΑΜΟΥΛΗΣ Α.Ε., ΑΘΗΝΑ, 2004.
- Ρόδης Π., Μέθοδοι Συντήρησης Τροφίμων, Εκδόσεις ΣΤΑΜΟΥΛΗΣ Α.Ε., ΑΘΗΝΑ, 1995.