

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	5 TH
COURSE TITLE	FOOD PRESERVATION		
INDEPENDENT TEACHING ACTIVITIES <i>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</i>	WEEKLY TEACHING HOURS	CREDITS	
Lectures, laboratory and problem solving tutorials	5	5	
<i>Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).</i>			
COURSE TYPE <i>general background, special background, specialised general knowledge, skills development</i>	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 become familiar with the various technologies of food preservation with emphasis be given on the safety and quality of the final product. The student will be able to 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
Team work	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...

Analyze 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

DELIVERY <i>Face-to-face, Distance learning, etc.</i>	In class teaching (power point presentation and blackboard writing) Theory and problem solving Class notes
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<p>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY</p> <p><i>Use of ICT in teaching, laboratory education, communication with students</i></p>																								
<p>TEACHING METHODS</p> <p><i>The manner and methods of teaching are described in detail.</i></p> <p><i>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.</i></p> <p><i>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</i></p>	<table border="1"> <thead> <tr> <th data-bbox="694 414 1021 443">Activity</th> <th data-bbox="1026 414 1358 443">Semester workload</th> </tr> </thead> <tbody> <tr> <td data-bbox="694 450 1021 479">Lectures</td> <td data-bbox="1026 450 1358 479">39</td> </tr> <tr> <td data-bbox="694 486 1021 555">Laboratory / Problem solving sessions</td> <td data-bbox="1026 486 1358 555">26</td> </tr> <tr> <td data-bbox="694 562 1021 591"></td> <td data-bbox="1026 562 1358 591"></td> </tr> <tr> <td data-bbox="694 598 1021 627"></td> <td data-bbox="1026 598 1358 627"></td> </tr> <tr> <td data-bbox="694 633 1021 663"></td> <td data-bbox="1026 633 1358 663"></td> </tr> <tr> <td data-bbox="694 669 1021 698"></td> <td data-bbox="1026 669 1358 698"></td> </tr> <tr> <td data-bbox="694 705 1021 734"></td> <td data-bbox="1026 705 1358 734"></td> </tr> <tr> <td data-bbox="694 741 1021 770"></td> <td data-bbox="1026 741 1358 770"></td> </tr> <tr> <td data-bbox="694 777 1021 806">Autonomous study</td> <td data-bbox="1026 777 1358 806">60</td> </tr> <tr> <td data-bbox="694 813 1021 882">Total contact hours and training</td> <td data-bbox="1026 813 1358 882">125</td> </tr> </tbody> </table>	Activity	Semester workload	Lectures	39	Laboratory / Problem solving sessions	26													Autonomous study	60	Total contact hours and training	125	
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<p>STUDENT PERFORMANCE EVALUATION</p> <p><i>Description of the evaluation procedure</i></p> <p><i>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</i></p> <p><i>Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</i></p>	<p>I. Final written examination (100% of the final course grade in THEORY) that includes:</p> <ul style="list-style-type: none"> - Multiple choice questions or Right/Wrong questions - Short answer questions - Judgment questions - Descriptive, essay type questions - Calculation problems <p>II. Final written examination (100% of the final course grade in LABORATORY) that includes:</p> <ul style="list-style-type: none"> - 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.