

FOOD PRESERVATION COURSE OUTLINE

GENERAL

SCHOOL	AGRICULTURAL SCIENCES		
DEPARTMENT	FOOD SCIENCE AND NUTRITION		
EDUCATION LEVEL	<i>Undergraduate</i>		
COURSE CODE	MK612	ΕΞΑΜΗΝΟ ΣΠΟΥΔΩΝ	ΣΤ'
COURSE TITLE	FOOD PRESERVATION RESPONSIBLE: I. Giovanoudis		
SELF-ENDED TEACHING ACTIVITIES <i>in case the credits are awarded in separate parts of the course e.g. Lectures, Laboratory Exercises, etc. If the credits are awarded uniquely for the entire course, enter the weekly teaching hours and total credits</i>	WEEKLY TEACHING HOURS	CREDIT UNITS (ECTS)	
Lectures	3	5	
Laboratory / Application Exercises	2		
COURSE TYPE <i>Background, General Knowledge, Scientific Area, Development Skills</i>	Scientific Area of Food Preservation		
PREREQUISITE COURSES:			
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek		
THE COURSE IS OFFERED TO ERASMUS STUDENTS	No		
COURSE WEBSITE (URL)			

LEARNING OUTCOMES

Learning Outcomes

The aim of the course is for students to acquire basic knowledge in food science and technology related to food preservation. They will be taught the principles of food preservation which they will be able to relate to basic quality and physicochemical parameters of food. They will be taught basic as well as innovative food preservation techniques. They will also acquire the knowledge to select suitable packaging materials and techniques to extend the shelf life of food. Finally, they will acquire the knowledge and tools to determine the shelf life of food (perishable and long shelf life) in the supply chain as well as predict the remaining shelf life at different stages of the cold chain. They will be taught in two lectures the use of excel (a) for the evaluation of the destruction of food microorganisms and enzymes in thermal processes and (b) the use of mathematical models for predicting the remaining shelf life of perishable foods at different stages of the cold chain.

General Skills

- Data search, analysis and synthesis
- Promotion of critical thinking
- Promotion of teamwork

COURSE CONTENT

1st Week: Introduction
 2nd Week: Thermal maintenance processes
 3rd Week: Thermal preservation processes: Selection of an appropriate thermal process, effect on microbial populations
 4th Week: Thermal maintenance processes: Kinetic study of thermal processes (thermal death time, sub-doubling time, thermal resistance)
 5th Week-Tutorial (students may have a personal computer with them)
 Use of PC (excel) for the mathematical description of the destruction of microorganisms and enzymes in thermal processes

Week 6: New non-thermal food preservation technologies-Ultra high pressure, pulsed electric fields
 7th Week: Maintenance at low temperatures (Refrigeration, Freezing)
 8th Week: Preservation by dehydration-The role of water in food preservation
 9th Week: Maintenance with packaging technologies
 Week 10: Obstacle Technology
 11th Week-Tutorial exercise (students may have a personal computer with them): Utilization of mathematical models for predicting the remaining shelf life of perishable foods at different stages of the cold chain.
 12th Week: Repetition-Solve exercises
 13th Week: Review or optional Visit to a food industry

Laboratory exercises

#1: Maximum temperature and food heat treatment curves (pasteurization-sterilization)
 #2: Kinetics of thermal inactivation of enzymes
 #3: Canning Packaging and Aseptic Packaging-Package Integrity Check
 #4: Application of modified atmosphere to perishable food of animal origin
 #5: Food Cooling Curve
 #6: Testing moisture permeability in conventional and new (biodegradable) packaging materials

TEACHING and LEARNING METHODS - EVALUATION

TEACHING METHOD	Face-to-face lectures in a classroom and Laboratory / Application Exercises in suitable Laboratory/ Classroom.	
USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES	Solving tutorial exercises using a computer - Developing mathematical models using a computer - Computer use during lectures by the teacher Computer use during tutorials by students	
TEACHING ORGANISATION	Activity	Semester's Workload
	Lectures	39
	Tutorial exercises	5
	Laboratory exercises	21
	Study	20
	Processing results of laboratory exercises and writing a report	28
	Preparation for written exam	12
	Total (25 workload hours per Credit unit)	125
STUDENT EVALUATION	<p>1. Written exam (70 to 100 %): - Multiple choice and TRUE/FALSE questions - Questions of crisis and short development - Solving computational problems</p> <p>2. Lab grade (0 to 30%): - Participation and performance during the laboratory exercise - Written report of laboratory results - Oral examination on written reports</p> <p><i>A prerequisite for the final written exam is the successful attendance of the laboratory part of the course. For the recognition of the course, students must secure a passable grade in both individual scores.</i></p>	

RECOMMENDED BIBLIOGRAPHY

Suggested Bibliography:

Book [68403752]: Food processing 1, Lazos E., Lazou A.

Book [68389027]: Food processing 2, Lazos E., Lazou A.

FOOD ENGINEERING, GOULA ATHANASIA, LAZARIDIS CHARALAMPOS

Book [77106804]: Food Packaging, Papadakis Spyridon E.

Book [68393954]: Food processing & preservation, Bloukas G.

Related scientific journals:

Journal of Food Engineering, Official scientific journal of the International Society of Food Engineering

Journal of Food Process Engineering

Food Engineering Reviews