

COURSE OUTLINE

(1) GENERAL

SCHOOL	FOOD AND NUTRITIONAL SCIENCES		
ACADEMIC UNIT	FOOD SCIENCE AND HUMAN NUTRITION		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	3560	SEMESTER	6th
COURSE TITLE	QUANTITATIVE FOOD MICROBIOLOGY		
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 and Laboratory Courses		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>	Science background course		
PREREQUISITE COURSES:	Food Microbiology, Food Biochemistry		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	No		
COURSE WEBSITE (URL)	http://fst.aua.gr/en/node/127		

(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 learning outcomes aim at:

- acquiring the knowledge and developing basic skills and critical thinking concerning the concept of qualitative and quantitative determination of food spoilage in terms of specific spoilage organisms, physiological characteristics, metabolic pathways, types of spoilage of major food categories (fresh meat, fish, fruits and vegetables)
- the acquisition of competencies in the field of microbial ecology in food ecosystems as well as the cell to cell communication (quorum sensing) and development of biofilm communities with focus on food safety and quality
- the development of their ability to assess the potential of foodborne illness caused by major pathogenic bacteria (*Listeria* spp., *Salmonella* spp., *Staphylococcus* spp., *Escherichia* spp., etc)

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?

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

- Make decisions
- Work independently
- Development of new research ideas
- Be critical and self-critical
- Advance free, creative and causative thinking

(3) SYLLABUS

- Ephemeral spoilage microorganisms-Chemical Indices of spoilage.
- Microbiological quality and safety indices
- Quantitative assessment of food safety and quality
- Quantitative assessment of spoilage of fresh meat and meat products.
- Quantitative assessment of spoilage of fresh fish.
- Quantitative assessment of spoilage of fresh fruits and vegetables.

- Principles of cell to cell communication (Quorum sensing).
- Bacterial agents of foodborne illness.
- Assessment of microbial inhibition originated from plant, animal and microbial sources
- Biofilms; quantification of Formation and control, mode of action, implications on food safety.
- Impact of biofilms in food safety and quality
- Implementation of rapid and non-invasive techniques in quantitative assessment of food safety and quality.
- Quantitative determination of kinetic parameters of microbial growth/survival.

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY <i>Face-to-face, Distance learning, etc.</i>	Lectures	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY <i>Use of ICT in teaching, laboratory education, communication with students</i>	Power point presentations. Student communication via e-mail. On-line access to food microbiology databases (e.g., www.combase.com)	
TEACHING METHODS <i>The manner and methods of teaching are described in detail.</i> <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> <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>	Activity	Semester workload
	Lectures	40
	Laboratory work	30
	Case study (short-term laboratory project)	40
	Written assignment	15
	Course total	125
STUDENT PERFORMANCE EVALUATION <i>Description of the evaluation procedure</i> <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</i>	<ol style="list-style-type: none"> 1. Written Examination (60%). 2. Written assignment (team work) (40%) 3. Laboratory examination (written test) (30%) 4. Laboratory project (team work) (70%) 	

*examination of patient, art interpretation,
other*

*Specifically-defined evaluation criteria are
given, and if and where they are
accessible to students.*

(5) ATTACHED BIBLIOGRAPHY

- Balatsouras, G.M. (2006) Food Microbiology, Embryo Publications, Athens
- Adams & Moss (2000) Food Microbiology, RSC
- Nychas, G.J.E. Lectures in Food Microbiology, University notes
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