COURSE OUTLINE

(1) GENERAL

SCHOOL	FOOD AND NUTRITIONAL SCIENCES		
ACADEMIC UNIT	FOOD SCIENCE AND HUMAN NUTRITION		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**3660**	**SEMESTER**	**5th**
COURSE TITLE	**FOOD MICROBIOLOGY**		

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 and Laboratory Courses	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*	Science background course
PREREQUISITE COURSES:	General Microbiology, Biology, 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*

Upon successful completion of the course, the students will be able to:

- Understand the role and function of the intrinsic, extrinsic and implicit factors to control the growth/survival and death of microorganisms in the food environment
- Understand the application of hurdle concept to control food spoilage and enhance food safety
- Implement microbial enumeration and quantification on food products using conventional microbiological techniques
- Integrate the acquired knowledge with other related scientific disciplines

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…*
	…….

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

(3) SYLLABUS

- The scope of Food Microbiology. Microorganisms and food materials
- Factors affecting the growth and survival of microorganisms in foods
- Hurdle concept – principles and applications
- Intrinsic factors affecting the growth of microorganisms in foods (pH, water activity, buffer capacity, redox potential)
- Extrinsic factors affecting the growth of microorganisms in foods (temperature, relative humidity, modified atmospheres)
- Natural antimicrobial systems
- Hurdles of microbial origin

- Hurdles of plant origin
- Conventional & rapid methods for microbial assessment / enumeration in foods
- Methods and techniques based on molecular tools and sensors
- Principles of Microbial ecology (habitat, niche and domain of microorganisms)
- The basic principles of microbiological food spoilage

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Lectures
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Power point presentations. Student communication via e-mail. On-line access to food microbiology databases (e.g., www.combase.com)
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.*	1. Written Examination. 2. Individual lab exercise examination (practical training) accompanied by a written test. The final grade takes into count the performance in the laboratory exercises (50%) and the written exam (50%).

Activity	***Semester workload***
Lectures	50
Laboratory work	75
Course total	**125**

(5) ATTACHED BIBLIOGRAPHY

- Nychas, G.J.E. Lectures in Food Microbiology, University notes
- Adams, M.R., Moss, M.O. (2008) Food Microbiology, RSC Publishing, UK
- Jay, M.J. (2000) Modern Food Microbiology, 6th Edition, Aspen Publishers, USA