

## COURSE OUTLINE

### (1) GENERAL

<b>SCHOOL</b>	FOOD AND NUTRITIONAL SCIENCES		
<b>ACADEMIC UNIT</b>	FOOD SCIENCE & HUMAN NUTRITION		
<b>LEVEL OF STUDIES</b>	INTEGRATED MASTER		
<b>COURSE CODE</b>	<b>3550</b>	<b>SEMESTER</b>	<b>6</b>
<b>COURSE TITLE</b>	<b>FOOD HYGIENE</b>		
<b>INDEPENDENT TEACHING ACTIVITIES</b> <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>		<b>WEEKLY TEACHING HOURS</b>	<b>CREDITS</b>
	Lectures	3	5
	Laboratory	2	5
	<b>Total</b>	<b>5</b>	<b>5</b>
<i>Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).</i>			
<b>COURSE TYPE</b> <i>general background, special background, specialised general knowledge, skills development</i>	specialised general knowledge		
<b>PREREQUISITE COURSES:</b>	Food Microbiology, Food Engineering, Food Chemistry, Statistics		
<b>LANGUAGE OF INSTRUCTION and EXAMINATIONS:</b>	Greek		
<b>IS THE COURSE OFFERED TO ERASMUS STUDENTS</b>	Yes (in English)		
<b>COURSE WEBSITE (URL)</b>	<a href="http://www.gewponoi.com/trofima/ygieini/">http://www.gewponoi.com/trofima/ygieini/</a>		

## (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*

*It is an introduction to food safety and assists in acquaintance of knowledge on (a) biological, chemical and physical hazards in foods; (ii) the types of foodborne diseases, their special characteristics and their associations with specific hazards; (iii) fundamental hygiene rules (prerequisite programs), manifested as Good Manufacturing Practices, Good Hygiene Practices, which serve as a basis for food safety management systems.*

*The course aims to familiarize students with the latest approaches in food safety, the relevant legislation and the new risk metrics. The ultimate goal is that the student develops "horizontal" and systematic thinking on food safety. He or she becomes qualified as a food safety inspector or a food safety expert, capable of identifying hazards along the food chain (i.e., performing hazard analysis) and assessing the impact of food safety interventions in order to prevent, eliminate or reduce hazards at acceptable levels, i.e., risk mitigation.*

*The lectures offer a multi- and inter-disciplinary framework on food safety, integrating knowledge obtained from other courses of Food Science. Teaching is highly based on case studies. It is interactive and requires that the students act as food safety professionals on real examples of outbreak investigation or potential cases of noncompliance of a processing line or a final product with hygiene standards.*

*The course also describes the principles of hygienic design of food processing facilities and equipment, along with a thorough overview of Good Sanitation Practices. Special focus is provided on Good Hygiene and Good Manufacturing Practices and the detailed description of the Basic and Operational Prerequisite Programs.*

*The ultimate goal of the course is to teach the students a holistic approach on food safety, assist them in solving problems, making mature decisions in risk mitigation and prepare them for application of the HACCP principles in food safety management systems, such as ISO 22000.*

*By the end of the course, students will be qualified in:*

- *Performing inspection on hygiene of food processing establishments*
- *Assessing the adequacy of prerequisites and improve the total hygiene infrastructure*
- *Coordinating systematic outbreak investigations for identifying the hazard causing*

*the outbreak and the point-of-entry in the food chain (i.e., source attribution).*

- *Designing proper decontamination interventions*
- *Applying HACCP principles and adopting them in food safety management systems, which will be taught more extensively in subsequent courses.*
- *Understanding risk assessment methodology and stochastic/systems thinking in making decisions on food safety*

### **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>.....</i>
<i>Production of new research ideas</i>	<i>Others...</i>
	<i>.....</i>

*Retrieve, analyse and synthesise data and information, with the use of necessary technologies*

*Adapt to new situations*

*Make decisions*

*Work autonomously*

*Work in teams*

*Work in an international context*

*Be critical and self-critical*

*Advance free, creative and causative thinking*

### **(3) SYLLABUS**

- Introduction to Food Hygiene; Terms and definitions; new risk metrics (ALOP, FSO, Performance objective, performance criteria, etc.)
- Food safety legislation; Codex-Alimentarius-Package of Food Hygiene EU regulations (178/2002; 852-854/2005, 2073/2005)
- Food hazards
- Foodborne diseases (intoxications vs infections) and sub-categories
- Attributes of biological and chemical foodborne hazards; growth/survival limits of foodborne pathogens; ecosystems that are likely associated with the presence of pathogens, hazard ecology
- Controlling biological hazards (application of hurdle theory)
- Basic infrastructure for Hygiene of Food Premises; Principles for hygienic design of food processing establishments and equipment
- Prerequisite programs; GMP, GHP; Basic vs operational prerequisite programs
- Introduction to HACCP; brief description of the 7 HACCP principles
- Introduction to risk analysis – Application of stochastic thinking in food safety; stochastic description of process parameters and microbial responses.

#### (4) TEACHING and LEARNING METHODS - EVALUATION

<p><b>DELIVERY</b> <i>Face-to-face, Distance learning, etc.</i></p>	Face-to-face	
<p><b>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY</b> <i>Use of ICT in teaching, laboratory education, communication with students</i></p>	Power point presentations and exercises on the Blackboard and computer Student contact electronically	
<p><b>TEACHING METHODS</b> <i>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.</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>	<b>Activity</b>	<b>Semester workload</b>
	Lectures	30
	Field work	10
	Laboratory work	25
	Study and analysis of scientific papers and book chapters	10
	Seminars	10
	Case study	40
	<b>Total contact hours and training</b>	<b>125</b>

<p><b>STUDENT PERFORMANCE EVALUATION</b> <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>Written Examination, Oral Presentation, tests, written assignments. Written reports for laboratory or outdoor exercise, Self-assessment electronically.</p> <ol style="list-style-type: none"> <li>Each lab exercise is examined orally and by a written test. The laboratory examination of each subject must be successful. The average of the exercise grades counts 25% in the overall score of the course.</li> <li>At the end of each lecture, students are asked to answer a number of questions related to the lecture electronically. At the end of their courses they have to present orally by a power point presentation one scientific paper counting 15%. They also have to present data given to them which are statistically analysed and related to multiple environmental parameters (it counts 25%).</li> <li>A computerized exam (in the blackboard) based on multiple choice counts 35% of the final written exam. Consequently for the final grade count the performance in the laboratory exercises (25%), the presentations (40%) and the written exam at the end (35%).</li> </ol>
---	--

## (5) ATTACHED BIBLIOGRAPHY

- Skandamis, P.N., Nychas, G.-J. E. and Sofos, J.N. 2013. Meat decontamination, In: "Handbook of Meat Processing" (Eds. F. Toldra), Chapter 3, Willey-Blackwell.
- Gil, M.I., Selma, M.V., López-Gálvez, F., Allende, A. 2009. Fresh-cut product sanitation and wash water disinfection: problems and solutions. *International Journal of Food Microbiology*, 134, 37-45.
- De Roever, C. 1998. Microbiological safety evaluations and recommendations on fresh produce. *Food Control*, 9, 321-347.
- EFSA 2013. The European Union Summary Report on Trends and Sources of Zoonoses, Zoonotic Agents and Food-borne Outbreaks in 2011, SCIENTIFIC REPORT OF EFSA AND ECDC: *EFSA Journal* 2013;11(4):3129.
- Scallan, E., Hoekstra, R.M., Angulo, F.J., Tauxe, R.V., Widdowson, M-A. Roy, S.L., Jones, J.L. and Griffin, P.M. 2011. Foodborne illness acquired in the United States — major pathogens. *Emerg. Inf. Dis.* 17, 7.
- Scallan, E., Griffin, P.M., Angulo, F.J., Tauxe, R.V., Hoekstra, R.M. 2011. Foodborne illness acquired in the United States—Unspecified Agents *Emerg. Inf. Dis.* 17, 16.
- D'Mello, J.P.F. 2003. *Food safety: contaminants and toxins*, CABI Publishing, UK, ISBN: 0851996078.
- Georgakopoulos, P., Foteinopoulou, E., Athanasopoulos, P., Drosinos, E.H. and Skandamis, P.N. 2007. Recoveries of four representative organophosphorus pesticides from 18 plant products belonging to different botanical categories: implications for matrix effects. *Food Add. Contam.* 24: 360-368
- Hayes, W. J., & Lays, E. R. 1991. Classes of pesticides, pp. 1049–1053. In: W. J. Hayes, & E. R. Lays (eds), *Handbook of pesticide toxicology: Volume 2*, Academic Press Inc., San Diego, California.
- Lu, F. C. 1995. A review of the acceptable daily intake of pesticides assessed by WHO. *Regulatory Toxicology and Pharmacology*, 21, 352–364.
- Steyn, P., 1995. Mycotoxins, general view, chemistry and structure. *Toxicology Letters* 82/83, 843-851.

It is also updated in each chapter in the BLACKBOARD