

COURSE OUTLINE

(1) GENERAL

SCHOOL	FOOD AND NUTRITIONAL SCIENCE		
ACADEMIC UNIT	FOOD SCIENCE AND HUMAN NUTRITION		
LEVEL OF STUDIES	Undergraduate		
COURSE CODE	3434	SEMESTER	8^o
COURSE TITLE	Microbiology of Milk and Milk Products		
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 exercises	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:	Food Microbiology, Dairy Science, Technology of Milk and Milk Products		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:			
IS THE COURSE OFFERED TO ERASMUS STUDENTS			
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 aims to inform the students on the microbiology of milk and its products. Emphases are placed on the knowledge and distinguish of the desired starter cultures and their usage for the manufacturing of safe products, with particular organoleptic and functional characteristics. Finally, special mention is made in the microbiological changes of dairy products, the safety and hygiene of milk industries.

Upon successful completion of this course the student will be able to:

- think critically on the microbiological quality and safety of milk and its products, both in the production process, and in the storage and distribution chain.
- Know the tools and techniques of health management and security products milk
- interpret the problems of microbial degradation of product quality and develop direct ways to address them.
- Create and present a plan in a case study, partnering with fellow students.

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

Adapting to new situations

Decision-making

Working independently

Team work

Project planning and management

Respect for difference and multiculturalism

Respect for the natural environment

Showing social, professional and ethical

responsibility and sensitivity to gender issues

Criticism and self-criticism

Production of free, creative and inductive thinking

<i>Working in an international environment</i>
<i>Working in an interdisciplinary environment</i>	<i>Others...</i>
<i>Production of new research ideas</i>

Overall, the course aims to:

- Decision making
- *Autonomous* work
- Teamwork and cooperation capacity
- Promotion of the free, creative and inductive thinking

Plan and manage the quality and safety of dairy products

(3) SYLLABUS

Lectures:

- I. Microbiology and specifications of thermized , pasteurized and high pasteurized milk
- II. Microbiology, microbiological changes and other defects of UHT and powder milk
- III. Microbiology, microbiological changes and other defects of condensed milks
- IV. Microbiology, microbiological changes and other defects of cream and butter.
- V. Microbiology, microbiological changes and other defects of the ice cream.
- VI. Microbiology, microbiological changes and other defects of yogurt, and other fermented milk products
- VII. Lactic acid bacterial cultures used in the dairy Industry
- VIII. Microbiology, microbiological changes and other defects of cheeses
- IX. The role of microorganisms in the ripening of cheeses. Acceleration of cheese ripening process
- X. Flora of mould-ripened cheeses

<p>XI. Utilization of whey using various microbes</p> <p>XII. Hygiene of Dairy Industries</p> <p>XIII. Food poisoning from dairy products</p> <p>Laboratory courses:</p> <p>i. Microbiological analysis of milk (raw , pasteurized and high pasteurized)</p> <p>ii. Microbiological analysis of cheese and butter.</p> <p>iii. Microbiological analyzes, of powder milk and ice cream</p> <p>iv. Microbiological analysis of yoghurt.</p> <p>v. Isolation of lactic acid bacteria from yoghurt samples and characterization.</p> <p>vi. Identification and characterization of lactic acid bacteria</p> <p>vii. Control of viability and activity of starter cultures</p> <p>viii. Presentation of a project</p>

(4) TEACHING and LEARNING METHODS - EVALUATION

<p>DELIVERY <i>Face-to-face, Distance learning, etc.</i></p>	<p>In classroom by using teaching visual aids (Projector Lessons, Video, slides)</p>	
<p>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY <i>Use of ICT in teaching, laboratory education, communication with students</i></p>	<p>Supporting the learning process through the electronic platform e-class and Ms-Teams</p>	
<p>TEACHING METHODS <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</i></p>	<p>Activity</p>	<p>Semester workload</p>
	<p>13 weekly lectures (2 h/ lecture)</p>	<p>60</p>
	<p>Laboratory exercises with the active participation of students</p>	<p>25</p>

<p><i>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>	in pilot production and evaluation of various dairy products	
	Work (individual or collective)	15
	Total Course (25 hours Course and training) per credit unit)	100
<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>Greek is the course exam's language (and English for ERASMUS students)</p> <ul style="list-style-type: none"> - The final score results from both the theoretical and laboratory rates (percentages) 60 % and 40 % respectively. - The score of the theoretical part results from the final (written) exam.- <p>The score of the laboratory part results from: 20% (i. + ii) and 80% (iii).</p> <ul style="list-style-type: none"> i. the successful performance of the experiments ii the. work (related to the processing of the experimental data) and iii. The final examination at the end of each semester 	

(5) ATTACHED BIBLIOGRAPHY

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Recommended bibliography:

- **Mantis A.**, Papageorgiou D., Fletouris D., Aggelidis A. (2015). *Hygiene and Technology of Milk and Milk Products*. Ed. Kyriakidi Bros A.E. **ISBN 960-343-594-X**.
- *Microbiology in Dairy Processes: Challenges and Opportunities*. Palmiro Poltronieri (Ed.), Wiley-Blackwell (2017).
- Robinson, R.K. (2005). "*Dairy Microbiology Handbook. The Microbiology of milk and milk products*" New York: Willey- Interscience.

Related-journals:

- *Food Microbiology*
- *Journal of Food Protection*
- *International Dairy Journal*
- *International Journal of dairy Technology*
- *Dairy Science and technology*