

COURSE OUTLINE

1. GENERAL

SCHOOL	School of Food and Nutritional Sciences		
ACADEMIC UNIT	FOOD SCIENCE AND HUMAN NUTRITION		
LEVEL OF STUDIES	INTEGRATED MASTER		
COURSE CODE	1620	SEMESTER	7
COURSE TITLE	DAIRY TECHNOLOGY I		
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 (Theory) and Practical Lessons (Laboratory Exercises)		5	5
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).			
COURSE TYPE <i>general background, special background, specialised general knowledge, skills development</i>		Specialized general knowledge	
PREREQUISITE COURSES:		Dairy Science, Food Microbiology, Food Engineering	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:		Greek	
IS THE COURSE OFFERED TO ERASMUS STUDENTS		YES (in English)	
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 material aims to provide up-to-date scientific knowledge about the transformation of milk into milk products. Specifically, it refers to mechanical, chemical and microbiological processes that take place during the production of dairy products, so that the student acquires a comprehensive understanding of the processes and the critical parameters of the production of dairy products as well as the interpretation of the principles on which each process is based. Upon successful completion of the course, the student will be able to: Have the critical thinking and skills required to manage the milk intended for production of dairy products of good quality. Know the tools and techniques of the management and production process of dairy products. Interpret problems and invent ways to deal with them. To create and present a design in a case study, working with his 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	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
Teamwork	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...
	

Acquisition, analysis and synthesis of data and information with the use of relevant technologies.
Knowledge flexibility and adaption in new scientific environment
Independent work
Work in interdisciplinary environment
Development of new research ideas
Respect and consideration on issues of diversity, difference and multicultural
Respect to ecosystems
Social and ethical responsibility and sensitivity on male/female issues
Critical thinking
Promotion of free, creative and analytical thinking

3. SYLLABUS

Lectures:

1. Introduction. Greek, European Union and world dairy sector.
2. Raw milk production and management, transport and quality control.
3. Design dairy plants and dairy equipment
4. Mechanical and thermal treatments of milk (cleaning, centrifugation - standardization, homogenization, pasteurization, sterilization). Technology for manufacturing pasteurized and UHT milk.
5. Technology for *manufacturing evaporated and sweetened condensed milk* and milk powder
6. Technology of fermented milk products (yogurt, buttermilk, kefir, etc.),
7. Ice cream technology
8. Technology of milk fat fraction products (cream, butter, anhydrous milk fat, butter oil).
9. Membrane Technology in Milk Processing
10. New technologies and product development in dairy industry
11. Technology of specific dairy products
12. Effect of various treatments on the characteristics of dairy products.
13. Milk and milk products packaging. Legislation of milk and its products

Laboratory courses/exercises:

1. Presentation of Dairy industry equipment
2. Mechanical Milking. Visiting facilities of milking installations
3. Determination of indicators for Heat Treatment of Milk
4. Homogenization: Milk Homogenization Control / homogenizers
5. Milk Fat Separation: centrifugation, skimmed milk and cream, Standardization of milk
6. Determination of the main physicochemical characteristics of dairy cream
7. Manufacture of Butter and butter oil
8. Visit to a dairy industry

9. Determination of the main physicochemical characteristics of butter.
10. Manufacture of Ice cream
11. Manufacture of fermented milk products (yoghurt)
12. Determination of fatty acid composition of dairy products

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY <i>Face-to-face, Distance learning, etc.</i>	Face-to-face, in the classroom Distance learning, when necessary														
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY <i>Use of ICT in teaching, laboratory education, communication with students</i>	- Asynchronous teaching by means of the platform e-class, which is also used for the communication with the students. - Distance learning by means of MS Teams platform. - Communication also by E-mail using the e-student platform														
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 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>	<table border="1"> <thead> <tr> <th>Activity</th><th>Semester workload</th></tr> </thead> <tbody> <tr> <td>13 weekly lectures (3 h/ lecture + personal study)</td><td>39</td></tr> <tr> <td>Laboratory exercises on the manufacture of various cheese varieties and cheese analysis in small groups of students</td><td>26</td></tr> <tr> <td>Personal study</td><td>50</td></tr> <tr> <td>Written reports on laboratory exercise</td><td>10</td></tr> <tr> <td>Total contact hours and training</td><td>125</td></tr> <tr> <td>Course total</td><td>125</td></tr> </tbody> </table>	Activity	Semester workload	13 weekly lectures (3 h/ lecture + personal study)	39	Laboratory exercises on the manufacture of various cheese varieties and cheese analysis in small groups of students	26	Personal study	50	Written reports on laboratory exercise	10	Total contact hours and training	125	Course total	125
Activity	Semester workload														
13 weekly lectures (3 h/ lecture + personal study)	39														
Laboratory exercises on the manufacture of various cheese varieties and cheese analysis in small groups of students	26														
Personal study	50														
Written reports on laboratory exercise	10														
Total contact hours and training	125														
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 examination of patient, art interpretation, other</i> <i>Specifically defined evaluation criteria are given, and if and where they are accessible to students.</i>	Language of examination: Greek (English for ERASMUS Students) Evaluation of the student: THEORY: Written final exam on the full content of the Lectures that combine short-answer questions, open-ended questions, multiple-choice questionnaires. LABORATORY: Combination of written reports for exercises (20%) and written final exam (80%).														

	The exam questions are derived from the textbooks offered to the students, the material posted on e-class by the instructors and the content of the lectures.
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5. ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

Selections of the textbooks that are available through the online service "EVDXOS"

- Zerfirides G., *Technology of Dairy Products*. Yahoudis Publications: Thessaloniki, 2001.
- Mantis A., Papageorgiou D., Fletouris D & Angelidis A. *Hygiene and Technology of Milk and Products*, Kyriakidis Publications S.A. 2015, ISBN 978-960-602-017-9

Other suggestions books

- *Dairy Processing Handbook*. Tetra Pack Processing Systems AB S221 86 Lund, Sweden.
- Walstra P., Vouters J. & Geurts, T. (2006) *Dairy Science and Technology*, 2nd Ed., CRC Press - Taylor & Francis Group

- Related academic journals:

- *Journal of Dairy Science*
- *Journal of Dairy Research*
- *International Dairy Journal*
- *International Journal of Dairy Technology*
- *Dairy*
- *Innovative Food Science and Emerging Technologies*
- *International Journal of Food Science & Technology*